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Paper TRADE JOURNAL

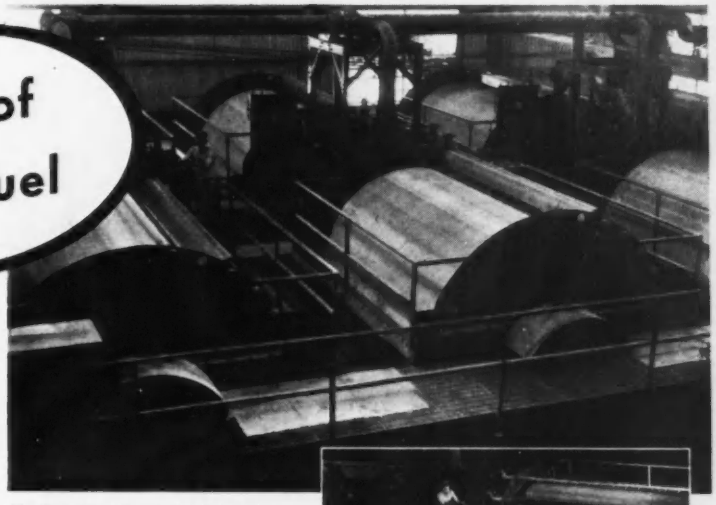
REG. U.S. PAT. OFF.

VOLUME 125, No. 10 SEPTEMBER 4, 1947

Cuts costs of chemicals and fuel

Scientific advances in pulp washing with Swenson-Nyman Equipment have reduced chemical losses to less than 40 lb per ton of A. D. pulp—only the amount carried away in the pulp itself. This multi-stage washing also reduces dilution and eases the evaporator load.

After equipment has been installed, Swenson engineers assist in determining optimum water rates, drum speeds, washer valve settings, and shower location for the production rate and pulp hardness...thus assuring greatest possible economy. It will pay you to investigate.



Six Swenson-Nyman Pulp Washers arranged in two 3-drum lines. Each line provides 5-stage washing.

Write for Pulp Washer Bulletin F-104

Close-up view of second and third drum. Each is 9' diam. x 12' face.

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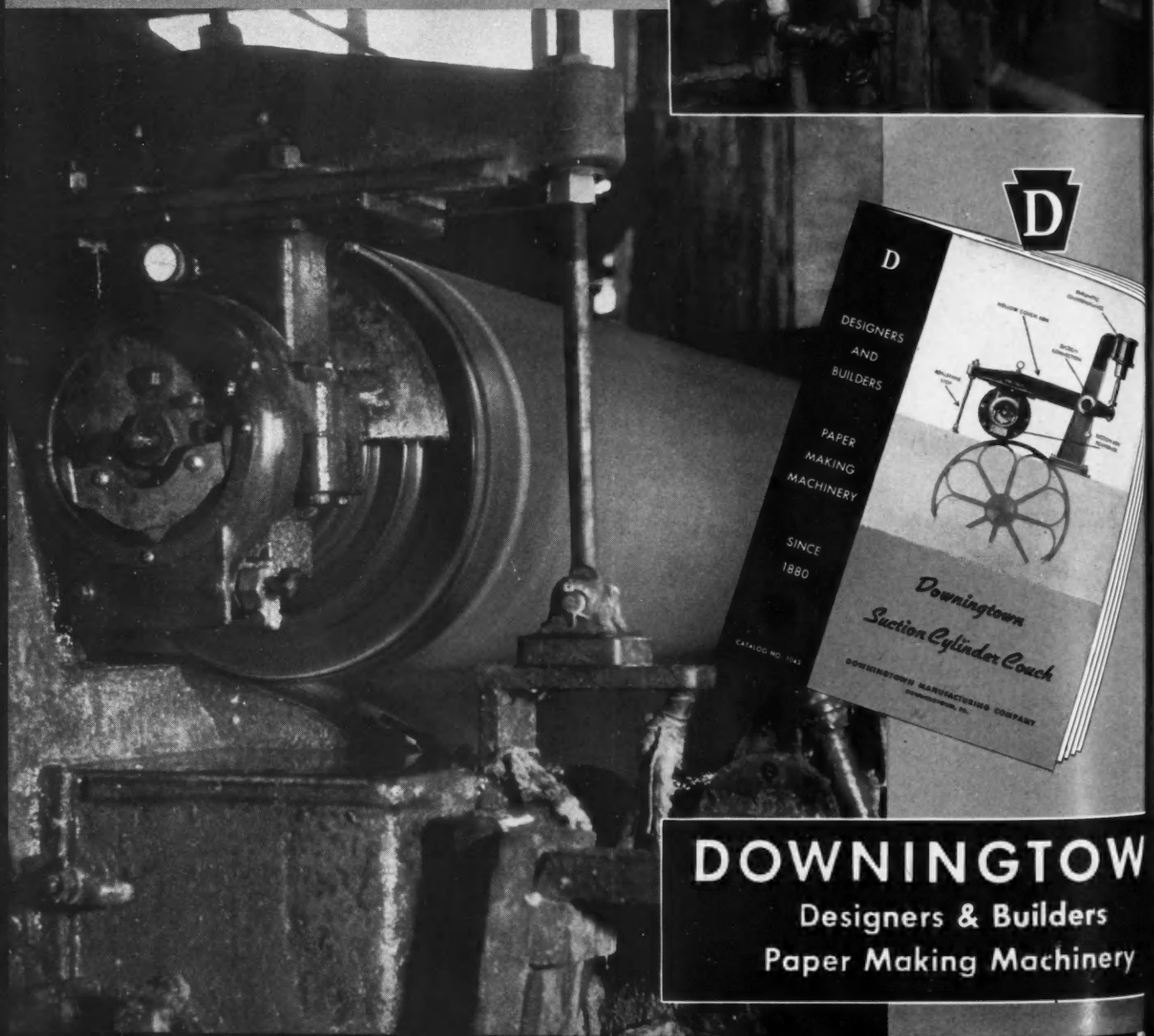

DOWNINGTOW
Designers & Builders
Paper Making Machinery

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Volume 125 — **Number 10**

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W. L. COOK, *Editor* • HARRY I. JENSEN, *Assistant Editor* • R. G. MACDONALD, *"TAPPI" Editor* • F. B. GROSSE, *Production Manager*

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CALENDAR OF COMING EVENTS

September 25-26, 1947—TAPPI Plastics Meeting, New State College of Forestry, Syracuse, N. Y.

October 4-6, 1947—National Association of Waste Material Dealers, Inc. Fall Convention, Hotel Ritz-Carlton, Atlantic City, N. J.

October 9-11, 1947—TAPPI Alkaline Pulping and Chemical Products Meeting, Asheville, N. C.

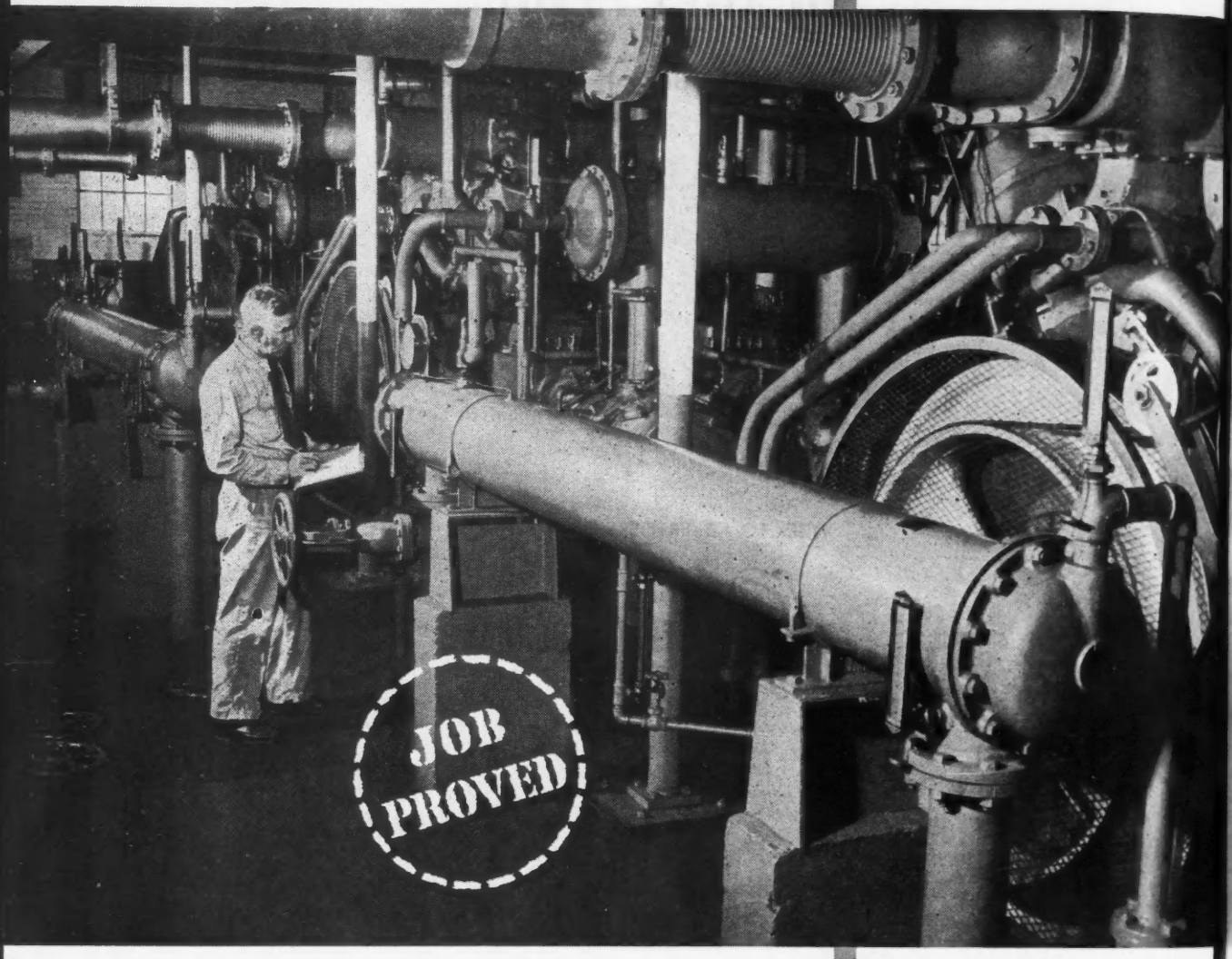
October 23-24, 1947—TAPPI Fibrous Agricultural Residues Meeting, Alton, Ill.

October 27-29, 1947—The National Paper Trade Association of the U. S., Inc., Semi-annual Convention. Hotel Sherman, Chicago.

November 3-5, 1947—TAPPI Second Engineering Conference, Philadelphia, Pa.

May 18-20, 1948—American Pulp and Paper Mill Superintendents Association, Annual Meeting, Roosevelt Hotel, New Orleans, La.

Compressing Maintenance Problems



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Paper TRADE JOURNAL

VOL. 125, NO. 10 REG. U.S. PAT. OFF. SEPTEMBER 4, 1947

Industry Reports At Pollution Hearings

MENASHA, Wis. — A public hearing on stream pollution in Little Lake Butte des Morts was held here August 25 before the state pollution committee. Spokesmen for industry told of work being done locally and in the state to end the pollution problem, and other persons charged that Neenah and Menasha industries are killing fish. The committee is studying the testimony and is expected to announce its findings soon.

One proposal was that the present sewage disposal plant be expanded at a cost of $346,000 for an incinerator unit, to handle all wastes entering the plant, rather than by-passing some directly into the lake. Several citizens said that mills, when they "wash up" on week-ends, use kerosene and other substances harmful to fish, and discharge them directly into the lake or the Fox river, which flows through it.

Henry J. Rothschild, technical director of Kimberly-Clark Corporation and chairman of the advisory committee organized by the pulp and paper industry to investigate water pollution, said that Kimberly-Clark had spent $120,000 in remedial measures and research during the last ten years on the abatement of pollution.

He also told of the $440,000 being spent to find some use for sulphite liquor wastes, and the subject of an experimental plant being erected at Rhinelander to convert wastes into yeast to feed cattle and other animals. None of that type of wastes is found in Little Lake Butte des Morts, he said.

I. J. Stafford, general superintendent of the Neenah Paper Company, said that his company is spending $20,000 for equipment to hold down and reduce the "white water" overflow into the river from paper machines. Other wastes go into the sanitary sewers, he asserted.

W. H. Graebner, manager of Marathon, explained the corporation's "wash up" procedure. Solvents are placed into drums after being used, he declared, and then are taken to the dumps for burning. They are not discharged into the river or into the sanitary sewer. Solids are treated before they are discharged into the river or into the sanitary sewer, he stated. His company is spending $5,000 on a "white water" system to reduce the solids to less than one pound per 1,000 gallons.

N. H. Bergstrom, of the Bergstrom Paper Company, told of experiments now underway by the national conference on stream improvement at Kalamazoo, Mich., under conditions to those at his plant. The experiments are being followed closely, since they represent the first real attack on the disposition of solids in wastes.

Capehart's Group Tours In Alaska's Tongass Forest

SEATTLE — Making an on-the-spot investigation of the possibilities for developing a vast newsprint industry in Alaska, three members of a Senate newsprint sub-committee are touring the Territory this week. The group, headed by Senator Homer H. Capehart, flew from Seattle to Ketchikan by Pan American Clipper, August 27, to inspect the Tongass National Forest in Southeastern Alaska, an area that has been much publicized of late.

Senators Harry P. Cain, Republican, State of Washington; Allen J. Ellender, Democrat, Louisiana; and James Montgomery, publisher of the Indiana New Albany Tribune, were among the party.

Senator Capehart pointed out that the pulp industry in Alaska, when developed, has a potential output of a million tons of pulp a year. At present, the publishing industry of this country now consumes over four million tons of pulp annually, and to meet all requirements, needs a minimum of five million tons, he said.

"We must find an additional supply of pulp," Senator Capehart said, pointing out that 80 percent of present pulp consumption must be imported. Legislation designed to establish a newsprint industry in Alaska was recently given senatorial approval.

"There are three ways in which the government may be able to help development of a pulp industry in Alaska," Capehart said. "These are through the development of power resources, the building of small cities which will be needed near the mills, and helping to solve Alaska's transportation problems."

According to Senator Cain, Alaska will have a greater chance for statehood, through the building of permanent industries, such as the pulp development.

While in the Territory, he likewise plans to inspect airport sites. He said he would introduce a bill in the Senate involving the expenditure of several million dollars for construction of a super airport, the site to be selected by the Civil Aeronautics Administration.

The sub-committee plans to travel from Ketchikan to Juneau by boat, visiting cities along the way.

Second DP Group Arrives For Woods Operations

TORONTO, Ont.—The second contingent of an estimated 3,500 bushworkers recruited in Europe for Ontario lumber camps arrived at Halifax late last week. The group, 638 strong, are accompanied by 189 close relatives of Canadians who are being admitted into the country.

The U. S. army stransport, General M. B. Stewart, commanded by Capt. D. F. Murphy, sailed from Bremerhafen, Germany, a week ago. The would-be lumberjacks were enlisted in displaced persons camps in Germany, where they formed part of the hard core which refused to return to their native countries after service in Hitler's labor force. Almost the entire group will be dispatched to Kapuskasing, Ont., where they will be employed by Spruce Falls Pulp and Paper Company, subsidiary of Kimberly Clark Corporation, of Wisconsin.

Manufacturers Shipments Up 35 Per Cent in Value

WASHINGTON, D. C. — Estimated value of manufacturers' shipments of paper and related products for the first six months of 1947 was 35 percent above that for the corresponding 1946 half, the Bureau of Census reported this week. Value of these shipments, said the Bureau, increased to $2.7 billion this year from $2.0 billion in the first half of last year.

The index value of these shipments for June was 279, compared with 274 in May, and 208 in June last year, with an average month of 1939 as 100, the Bureau continued. Index value of manufacturers' inventories of paper and products for June was 221, compared with 206 in May, and 164 in June last year.

Shorter Is Named A Camp Vice-President

FRANKLIN, Va.—J. L. Camp, Jr., President of the Camp Manufacturing Company, Inc. has made known the appointment of Colonel Walter C. Shorter as vice-president, effective September 1. Col. Shorter, a native of Virginia and a graduate of V.M.I., class of 1923, in chemical engineering, brings with him a broad experience in the paper industry.

Upon graduation Col. Shorter was an assistant professor of mathematics at V. M. I. following which he was associated in a manufacturing capacity with the Columbian Paper Company, at Buena Vista, Va. Subsequently, he became sales manager of the Groundwood Paper Division of the International Paper Company of New York, a period during which he was active in the industry affairs as a vice-president of the Groundwood Paper Manufacturers Association.

In December 1940 he was loaned by International to the WPB in Washington where, as assistant chief of the Paper Branch, he was charged with centralizing the Army's paper procurement at Jersey City, as well as coordinating the Army packaging program. Later, he organized, and was Chief of the Containers Branch, WPB, in addition to being deputy of Phillip Reed, with supervision over several other industry branches.

In February 1942 he was called to active duty as a reserve artillery officer and was detailed as Chief of the WPB and OPA liaison branches of the War Department. In June 1942 he was ordered to England as Deputy General Purchasing Agent for the European Theatre of Operations and remained in that capacity until V-E day. As Deputy GPA, ETO, he was, in addition to his other duties pertaining to reciprocal aid, personally responsible for paper and lumber procurement in the U. K. and on the continent, as well as being one of the organizers of, and the U. S. Army member of the Anglo-American Packaging Committee. He was decorated by both the American and British Governments for his work.

Upon his discharge from the army he returned to the International Paper Company where, in addition to sales administration, he has been devoting his efforts towards coordination of the activities of the paper and converting activities of the Southern Kraft Division of the Company.

McCorrison Talks at Little Chute

KAUKAUNA, Wis. — Paper plays a major part in the present high living standard of the country, Guy McCorrison, vice-president in charge of sales of the Thilmany Pulp and Paper Company, told the Junior Chamber of Commerce at a recent dinner meeting, at Little Chute.

WALTER C. SHORTER
Joins Camp as Vice-President

B-M-T Names Taylor Seattle Sales Manager

SEATTLE — Appointment of William A. Taylor as sales manager, Printing Paper Department of Blake, Moffit & Towne at Seattle was recently made public by Frank A. Carson, division manager. A native of Dansville, N.Y., Taylor received his education in Buffalo, following which he worked for some time in the printing business. In 1922 he began his paper career with the Blake, Moffitt & Towne organization in Seattle starting in the warehouse and then to the office and sales departments. For the past twenty-three years he has been a member of the printing paper sales staff. His wide background of experience in both city and country territories was a determining factor in his selection as sales manager, according to Carson.

Taylor succeeds Frank Carson as sales manager. Carson was recently appointed to his present position following the sudden death of James C. Whitelaw, former manager. The Seattle division of Blake, Moffitt & Towne operates a branch at Yakima and serves all of western Washington as well as Alaska. It is one of sixteen divisions operated on the Pacific Coast by the pioneer firm of paper merchants.

Allen Retires from Empire Box Corp.

GARFIELD, N. J.—William H. Allen, for the past three years sales manager of the Empire Box Corporation, has resigned his position with that company. Mr. Allen, who has made a career of selling and package designing, has done promotional work in most important markets. Previous to his position with Empire he did sales and promotional work for Sutherland Paper Company of Kalamazoo, for 14 years.

Baker Is Manager At Longview Mill

LONGVIEW, Wash. — Raymond E. Baker of Plattsburg, N. Y., has been appointed mill manager of the Longview mill of the Pulp Division of the Weyerhaeuser Timber Company. Mr. Baker has been employed for the past two years in the pulp and paper division of the Diamond Match Company.

From 1941 to 1945 Mr. Baker was sulphite superintendent for the Munising Paper Company of Munising, Mich. Prior to that he was employed by the Brown Company of Berlin, N. H. This company is one of the large manufacturers of chemical woodpulp and paper. In this position Mr. Baker had considerable experience in the manufacture of bleached sulphate pulp, and the experience gained in these various connections should give him a well-rounded background for his duties with the Weyerhaeuser Timber Company.

Mr. Baker was born in Salem, Indiana, and is a graduate of dePauw University and of the Institute of Paper Chemistry at Appleton, Wis.

Mr. Baker plans to assume his new duties about November 1st.

Mrs. Baker was the former Jane Lesselyoung of Ironwood, Mich.

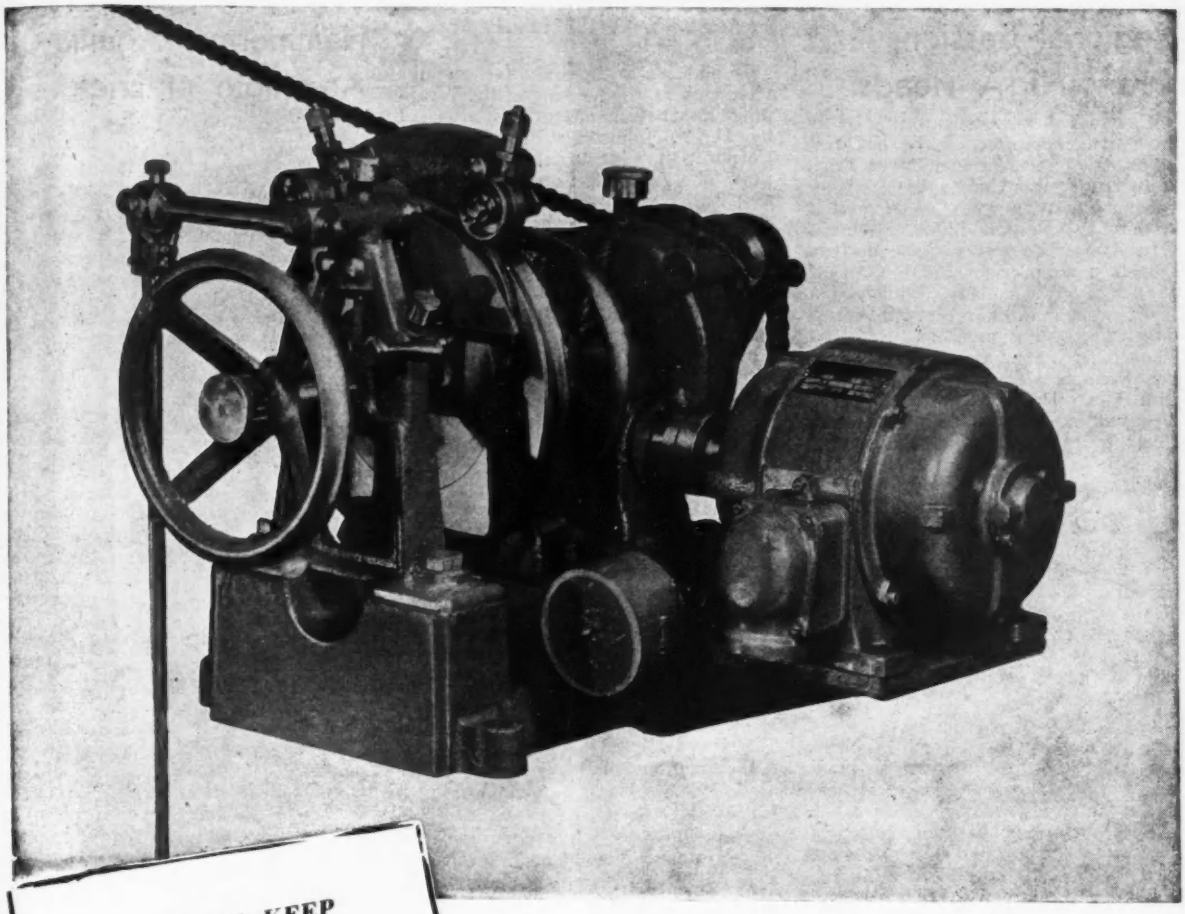
Rayonier Promotes Erickson At Fernandina Mill

FERNANDINA, Fla. — Appointment of Russell F. Erickson as assistant resident manager of the Fernandina Division, Rayonier Incorporated, was made known this week by Edward Bartsch, president of the company. Mr. Erickson became associated with Rayonier as plant engineer at Fernandina on January 1, 1946. From 1940 to 1945, he was plant engineer for the Hollingsworth & Whitney Company at Mobile, Ala., and previous to that time he spent several years with the George F. Hardy Company, consulting engineering firm.

Mr. Erickson was graduated from the University of Minnesota as a mechanical engineer and later took postgraduate work in civil engineering at Columbia University and Pratt Institute. In addition to Mr. Erickson's duties as assistant resident manager, he will continue, for the present, as plant engineer.

Schierl Succeeds Oberweiser On Bank Directorate

STEVENS POINT, Wis.—A. J. Schierl, secretary of the Whiting-Plover Paper Company, has been elected to the board by the directors of Citizens National Bank to succeed E. A. Oberweiser, Appleton, president of the Fox River Paper Corporation, who has disposed of his interests in the bank. Mr. Oberweiser was president of the bank from 1919 to 1942 and has since then been chairman of the board.



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Regional Sessions Draw NPTA Heads

CHICAGO — A special meeting of the executive committee of the board of directors of the National Paper Trade Association was held at the Hotel Sherman on August 24. President Arthur W. Towne, Blake, Moffitt & Towne, San Francisco, came in from the coast to preside. Ralph G. Luff, D. L. Ward Company, Philadelphia, vice-president in charge of the Wrapping Paper Division; L. A. Ramaker, The Bouer Paper Company, Milwaukee, vice-president in charge of the Fine Paper Division; and J. O. Bulkley, Bulkley, Dunton & Co., Inc., New York, treasurer, also attended. Other members present were F. H. Blackman, D. F. Munroe Company, Boston; R. E. Know, Knox & Schneider, Chicago, and R. W. Roehm, Beecher, Peck & Lewis, Detroit. The only member absent was S. T. Baron, Royal Paper Corporation, New York, on account of the death of his brother, Louis J. Baron. A. H. Chamberlain, J. H. Londergan, W. G. Leathers and Harold Held of the Association staff, were, of course, on hand.

The four-hour session was devoted to a thorough study of trade problems and Association affairs; also to planning for the fall convention to be held at the Hotel Sherman, October 27-29. It was reported that the principal speaker at the usual opening session, open to manufacturers and guests, would be Congressman Clarence J. Brown of Ohio, chairman of the House of Representatives' special committee on newsprint and paper supplies.

In the evening of the same day, August 24, meetings were held of the Divisional Commodity Committees headed by the respective vice-presidents. Those attending the Fine Paper meeting included, besides the executive committee members, F. W. Canaday, E. C. Palmer & Co., Ltd., New Orleans; D. A. Hoadley, Carpenter Paper Co., Omaha; P. M. Jones, Storrs & Bement Co., Boston; A. W. Leslie, John Leslie Paper Co., Minneapolis; A. M. Miller, Central Ohio Paper Co., Columbus; E. J. Petrequin, Petrequin Paper Co., Cleveland; E. A. Rohrer, Swigart Paper Co., Chicago; W. N. Gillett, Chicago Paper Company; and P. W. Lesh, C. P. Lesh Paper Co., Indianapolis.

In addition to the executive committee members, the meeting of the Wrapping Paper Committee was attended by D. Y. Johnson, Chatfield Paper Corporation, Cincinnati; C. H. Maurinus, The Alling & Cory Co., Rochester; Ralph Schnitzer, Magnolis Paper Co., Houston; and S. S. Weil, Joseph Weil & Sons, Inc., Chicago.

Both Fine and Wrapping Paper Committees found much to command their attention and planned important activities during the coming months. They will have reports ready for the October convention.

The Mid-West Regional meeting on August 25 was planned to synchronize with the above official sessions so that the national officers and committeemen could stay over to attend. There was a large representation of merchants from all over the Mid-Western area. Wrapping Paper matters were covered in the morning and Fine Paper matters in the afternoon with an attendance of well over fifty at each session. A thoughtful and forward looking address was made by President Towne, representing the National Association, and other officers spoke informally while many members participated in discussions from the floor.

Illuminating statistical studies were presented by Harry Londergan, and Bill Leathers reported in detail on a special survey covering conditions in the Wrapping Paper field. Members were enthusiastic in expressing their satisfaction with the meeting and the information and interchange of views brought out.

Dryden's New Machine Nearly Ready for Operation

TORONTO, Ont.—Good progress is reported being made by Dryden Paper Company, in the installation of a new and modern machine for the manufacture of kraft or wrapping paper and it is expected to start operating before the end of this year.

The new machine will add 60 to 70 tons a day to the company's output of paper and will provide a balance as between kraft pulp and paper production as well as in bags and other special products.

Hammermill Agents Assemble at Erie

ERIE, Pa.—Paper merchants from all over the United States, from Canada and from Cuba attended the thirty-fourth Conference with Hammermill Agents, held at Erie, August 20-22. The 186 attendance figure being but four short of the record-breaking number who convened for the 1946 Conference.

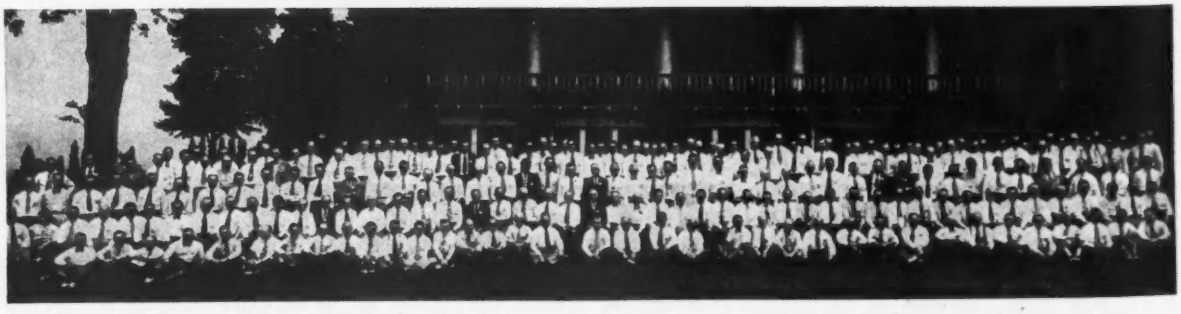
As in the past, the spirit of friendship and business cooperation existing between Hammermill and Hammermill Agents was a highlight of the 1947 Conference. Referring to this as he welcomed the agents at the opening business session, Norman W. Wilson, Hammermill president, stated: "We welcome you to this thirty-fourth Conference in that spirit of business partnership which has become traditional over the years, and which is tangible evidence of what can be done by men of good will working together in the spirit of free enterprise ever more closely."

Following Mr. Wilson, Donald S. Leslie, Hammermill's first vice-president and general manager, spoke in detail about the phases of the mill's expansion program that have been completed and those that are still to be completed. In the latter group is No. 7 papermaking machine, now being installed, and the largest Fourdrinier Hammermill has ever had.

A Cockletone Bond "roundup" concluded the August 21 meeting. Speaking in the following order, Harrison R. Baldwin, Hammermill vice-president in charge of sales; John D. Zink, assistant vice-president; Walter G. Hendrich, laboratory research expert; Grant Richardson, Eastern District sales manager and A. Ellis Frampton, advertising manager and assistant general sales manager, discussed the new paper from various aspects including its development, position in the market, physical tests, sales possibilities, and advertising promotion. A large board of Cockletone letterheads, sent to Hammermill by mill distributors throughout the United States, was displayed.

Bruce Barton, well known author and executive in the firm of Batten, Barton, Durstine and Osborn, Ham-

(Continued on page 30)



Hammermill agents gather in their thirty-fourth convention at Erie to plan a year's campaign

• PAPER—WOODPULP •

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Nepco Takes Over Enlarged Office

PORT EDWARDS, Wis.—The Nekoosa-Edwards Paper Company's mill office has been enlarged and remodeled throughout to relieve overcrowded conditions in the various departments located in the building. A 43 by 20 foot two-story wing has been added to the building adjoining the northeast corner of the structure, and the entire front of the building has been remodeled so as to be in harmony with the architectural design of the new addition.

More office and work space is now available to the technical department, the department of personnel administration, the manufacturing department and the timekeeper's office. Additional laboratory facilities have also been provided for. With the exception of the manufacturing department offices, where some interior finishing remains to be done, the construction work is now complete.

The new addition and the modernized front are constructed of wire cut brick. Glass block windows, separated by limestone spandrels, have been used throughout and ventilator units are set in each window to provide clear vision while eliminating heat loss and the infiltration of dirt particles.

Provisions have been included for the air conditioning of the entire addition and a separate circulating system has been installed in the laboratory to prevent the re-circulation of obnoxious fumes and gases.

The lower floor of the mill office addition consists of three new offices which are being occupied by the department of personnel administration. These offices have been scientifically planned for proper lighting, soundproofing, and ventilation, and the decorative scheme is in keeping with the best working conditions. The timekeepers office and telephone exchange have also been restyled in harmony with the offices in the new addition. A guard station has been installed in the vestibule of the new entrance. Windows of the station slope at a slight angle to avoid the reflection of light and heat from the sun.

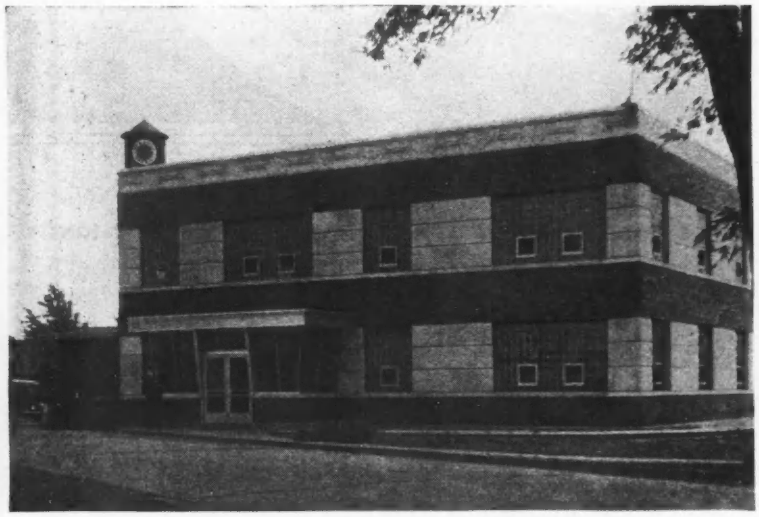
The technical department has been occupying its new offices in the upper floor of the new section for several weeks although some finishing work remains to be done in remodeling the laboratory. The new laboratory section is now completed and ready for the research and development work which will be carried on here. Three new offices in the technical department have relieved the congested condition which formerly existed in this department as a result of the company's keeping abreast of the latest technological and scientific advancement.

Departments housed in the newly enlarged and modernized mill office building are manufacturing, personnel administration, health and safety, timekeeper, engineering, light and power, technical, research and the central telephone office.

Gypsum Plants Operate At Six-Day Capacity

BUFFALO, N. Y.—All National Gypsum Company's plants are operating six days a week but the demand is "way in excess of capacity," said President Melvin H. Baker. "We haven't felt any softening in the market for our products," Mr. Baker said. "Sales are running at a record rate and about 40 per cent ahead of a year ago only because of the new capacity. As long as the country builds 700,000 new homes a year, we will continue to utilize our facilities at capacity."

Mr. Baker believes that costs in the building field may go higher. "We are faced with an advance in fuel prices, freight rates and increased steel prices," Mr. Baker said. "These would indicate," he said, "that any move made would be upward."



Nekoosa-Edwards now occupies its fine new office building

Customs Rulings Alter Duty Rates

NEW YORK — Paper from Canada claimed to be dutiable at one-fifth of 1 cent per pound and 5 percent as printing paper and described as clay loaded roto-gravure paper, has been held by Customs officials to be dutiable as coated paper at 5 cents per pound and 15 percent. A classic definition by an American manufacturer that "coated paper is a paper with a coating on it" has been sustained by administrative officials, according to Warren B. Bullock, manager of the Import Committee of the American Paper Industry.

Paper imported at San Francisco claimed by the importer to be dutiable as wrapping paper at 25 percent, has been classified for duty as vegetable parchment at 2 cents per pound and 10 percent.

English photographic paper has been found by Customs officials to have been undervalued on entry. Importers were required to amend their entries to bring the dutiable value up to the proper market value and duty was collected on the higher value. While this procedure involves technical dumping, the present American administration policy is to avoid imposition of an additional anti-dumping duty.

Finnish paper claimed to be printing paper is believed to be sulphite bond and has been submitted to the industry for opinions as to its proper classification.

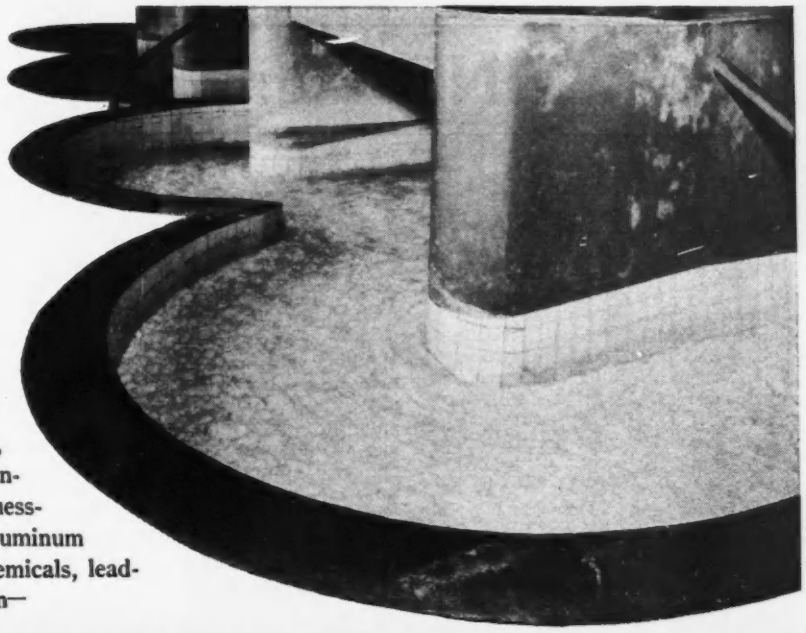
San-Nap-Pak's New Mill Ready for Production

HOLYOKE, Mass.—The newest paper mill in the Holyoke area was expected to be in production about September 1. Finishing touches are now being put on the installation of one papermaking machine and auxiliary equipment in the Mt. Tom division of the San-Nap-Pak corporation at Mt. Tom junction. The machine will produce from five to seven tons of tissue daily for use in San-Nap-Pak tissue products. This output will be at first converted in other plants of the company but eventually will be converted at Mt. Tom.

In from 30 to 45 days the second paper machine will be installed at the Mt. Tom plant. Meanwhile work is progressing on a new building to house the proposed converting plant. The one-story structure, 254 feet long and 34 feet wide, is being built by the Casper Ranger Construction Company of Holyoke. The converting plant is expected to be finished by November. About 75 people will be employed on the two machines and in the converting plant in addition to those employed on pulp manufacture.

The new papermaking and converting employes will be organized in the CIO Papermakers' union of which the pulp mill employees already have been members.

sizing



Maximum sizing and pH control call for careful selection of the chemicals used in paper making. Their quality must be uniform, their purity consistent, in order to insure perfect sizing. To take the guesswork out of their selection of Aluminum Sulfate and other paper-making chemicals, leading producers throughout the nation—

SPECIFY "GENERAL CHEMICAL"

ALUMINUM SULFATE

Standard—Ground, 99% thru 8 mesh, 95% thru 10 mesh; Powdered, 95% thru 100 mesh; and Lump.

Iron Free—Ground, thru 8 mesh; Lump, approximately 2½".

SODIUM SILICATE

Solutions: From 38° to 60° Baume — Wt. Ratio (Na_2O to SiO_2) from 1:2.00-1:3.40

Appearance: Opalescent to clear.

GENERAL CHEMICAL COMPANY PRODUCTS for the PAPER INDUSTRY

- Aluminum Sulfate *(Standard and Iron Free)*
- Muriatic Acid *(Hydrochloric)*
- Sodium Fluoride
- Sodium Silicate
- Sodium Metasilicate
- Glauber's Salt, *Crystal or Anhydrous*
- Salt Cake
- Sodium Sulfide
- Sodium Hyposulfite
- Sodium Sulfite, *Anhydrous*
- Sodium Bisulfite, *Anhydrous*
- Disodium Phosphate
- Trisodium Phosphate
- Tetrasodium Pyrophosphate
- Sulfuric Acid
- Nitre Cake *(Sodium Bisulfate)*
- Nitric Acid
- Chrome Alum
- Aqua Ammonia

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BASIC CHEMICALS

GENERAL CHEMICAL COMPANY

FOR AMERICAN INDUSTRY

FINANCE

Mosinee Sales Rose By Twenty Per Cent

WAUSAU, Wis. — Mosinee Paper Mills Company, Mosinee, reelected officers and stockholders August 26, at the Wausau club: Aytch P. Woodson, president; George L. Ruder, vice-president; Norman S. Stone, vice-president and general manager; H. L. Dessert, secretary; J. D. Mylrea, treasurer; and W. H. Knodeler, assistant secretary and assistant treasurer.

Reelected directors: Messrs. Woodson, Ruder, Stone, Dessert, Mylrea, John R. Diggs of Chicago, and H. M. Thompson of Milwaukee.

The president's report, covering operations of the company and its wholly-owned subsidiary, the Bay West Paper Company of Green Bay, for the year ended May 31, showed total net profit after income taxes of $538,354 during the fiscal year, as compared to $221,990 the previous year.

Net sales totaled $6,100,559 as compared to $4,879,622 during the preceding year. Current assets as of May 31 were $3,074,152, as compared to $2,639,231 on May 31, 1946.

During the past fiscal year, a first mortgage loan on $1,250,000 was negotiated with an insurance company at 3¾ percent interest for retirement of 5 percent first mortgage bonds, series of 1951; 6 percent collateral trust notes, series of 1951, and bond and note coupons due April 1, 1951, in a total of $1,084,382, and for plant improvement.

The company's long-term indebtedness was reduced to $1,028,000 through the refinancing.

Dividends of 50 cents per share were paid during the fiscal year, compared to 20 cents during the preceding year. Outstanding stock totals 200,000 shares.

About $476,000 was invested in the company's properties for improvements and modernization and included a complete new pulp-washing system to provide for continuous washing of the pulp, an 85-ton heat recovery furnace and a modern central pulp stock chest.

Production and shipment of paper towels and windshield wipers manufactured at the Bay West Paper Company's plant at Green Bay increases 12 percent.

Because of the heavy demand for special grades of treating and converting papers, Mosinee has discontinued manufacture of wrappings and is limiting its operations almost entirely to the new grades.

Mosinee purchased an additional 5,093 acres of second growth timberlands during the year, bringing its industrial forest acreage to 65,076. Two trained foresters are in charge. 300,000 seedling trees were planted.

The Bay West Paper Company held its annual meeting recently in Green Bay and reelected Mr. Woodson, president; Mr. Dessert, vice-president; William J. Servotte, Green Bay, vice-president and general manager; Mr. Ruder, secretary and treasurer; and L. E. Plettner, Green Bay, assistant secretary and treasurer. Messrs. Woodson, Stone, Dessert, Servotte, Mylrea and Ruder were reelected directors.

Wisconsin Valley Council Studies Freight Rates

WAUSAU, Wis.—The program committee of the Wisconsin Valley Industrial Research Council, meeting August 19, at the Wausau club, decided to await legislative developments concerning equalized freight rates for the Wisconsin river valley with those in other sections of the country.

T. S. Peavey, Wausau representative of the committee and freight rate expert for the Minnesota Mining and Manufacturing Company, pointed out that pending measures before the state legislature, if passed, would do much toward equalization of these rates throughout the state. An increase is suggested for the eastern freight rate section and a decrease allowed in the western section, of which the Wisconsin valley area is a part.

In view of this possible relief from existing conditions, members voted that the committee should "not disband but hold itself in readiness until such times that recent legislation clarifies our position."

North Tonawanda Mill Due For Additional Improvements

NORTH TONAWANDA, N. Y. — Plant Manager J. W. Youngchild of the International Paper Company mill has made known that $1,450,000 will be spent in the next two years to modernize the present building. By the end of 1947, $700,000 will have been spent and an additional $750,000 will be expanded in 1948. The modernization includes new equipment.

Among the improvements planned are a new stage for bleaching paper pulp and new washing equipment in the pulp mill section, new winders for finished paper and a modern paper-finishing room.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending August 30, 1947

STOCKS

	High	Low	Last
A. P. W.	4	4	4
Armstrong Cork Co.	46¼	45¾	46
Armstrong Cork Co., pf.	108½	107¼	107¼
Celotex Corp.	28½	27⅞	27⅞
Celotex Corp., pf.	20⅜	20⅛	20¼
Certain-Teed Products Corp.	17⅜	16¼	17
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	24¼	23½	24
Champion Paper & Fibre Co., pf.	109½	109½	109½
Congoleum Nairn Co.	30⅛	29½	29⅞
Container Corp. of America	41¼	40	40½
Container Corp. of America, pf.	103¾	103½	103½
Crown Zellerbach Co.	31⅞	31⅜	31⅞
Crown Zellerbach Co., pf. 4.20	107	105¼	107
Crown Zellerbach Co., 4 pf. 4	119½	118½	118
Dixie Cup Co.	38	36¾	37½
Dixie Cup Co.; A	53	53	53
Flintkote Co.	34½	33⅛	34½
Flintkote Co., pf.	108	107¾	107¾
Robert Gair	8⅞	8½	8¾
Robert Gair, pf.	20	19⅝	20
International Paper Co.	48⅛	46¼	47
International Paper Co., pf.	107	107	107
Johns-Manville Corp.	43	41½	42½
Johns-Manville Corp., pf.	119	118	118
Kimberly-Clark Corp.	25	24½	24¾
Kimberly-Clark Corp., pf.	110½	110½	110½
Mac Andrews & Forbes	37⅝	37⅝	37⅝
Mac Andrews & Forbes, pf.	....	....	....
Marathon Corp.	24	23⅝	23⅞
Mead Corp.	20⅝	20½	20⅝
Mead Corp., pf. 4¼	96½	95¾	96½
Mead Corp., pf. 2	....	....	....
National Container Corp.	14¾	13⅝	14
Paraffine Companies, Inc.	68½	66	66
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	26	25¼	25¾
Rayonier, Inc., pf.	37½	37	37½
Ruberoid Co.	56	55¼	56
St. Regis Paper Co.	10⅝	10½	10½
St. Regis Paper Co., pf.	95¾	94¾	94¾
Scott Paper Co.	47	42	42
Scott Paper Co., pf.	103½	103¼	103⅜
Sutherland Paper Co.	42	42	42
Union Bag & Paper Corp.	35	33¼	33⅝
United Paperboard Co.	14¾	14¼	14½
U. S. Gypsum Co.	100⅜	99½	99¾
U. S. Gypsum Co., pf.	....	....	....
West Virginia Pulp & Paper Co.	41⅞	40	41⅞
West Virginia Pulp & Paper Co., pf.	....	....	....

BONDS

Abitibi Pulp & Paper Co., 5s '53	....	....	....
Celotex Corp., 3¼s '60	....	....	....
Certain-Teed Products Corp., 5½s '53	....	....	....
Champion Paper & Fibre Co., 3s '65	....	....	....
Mead Corp., 3s '68	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending August 30, 1947

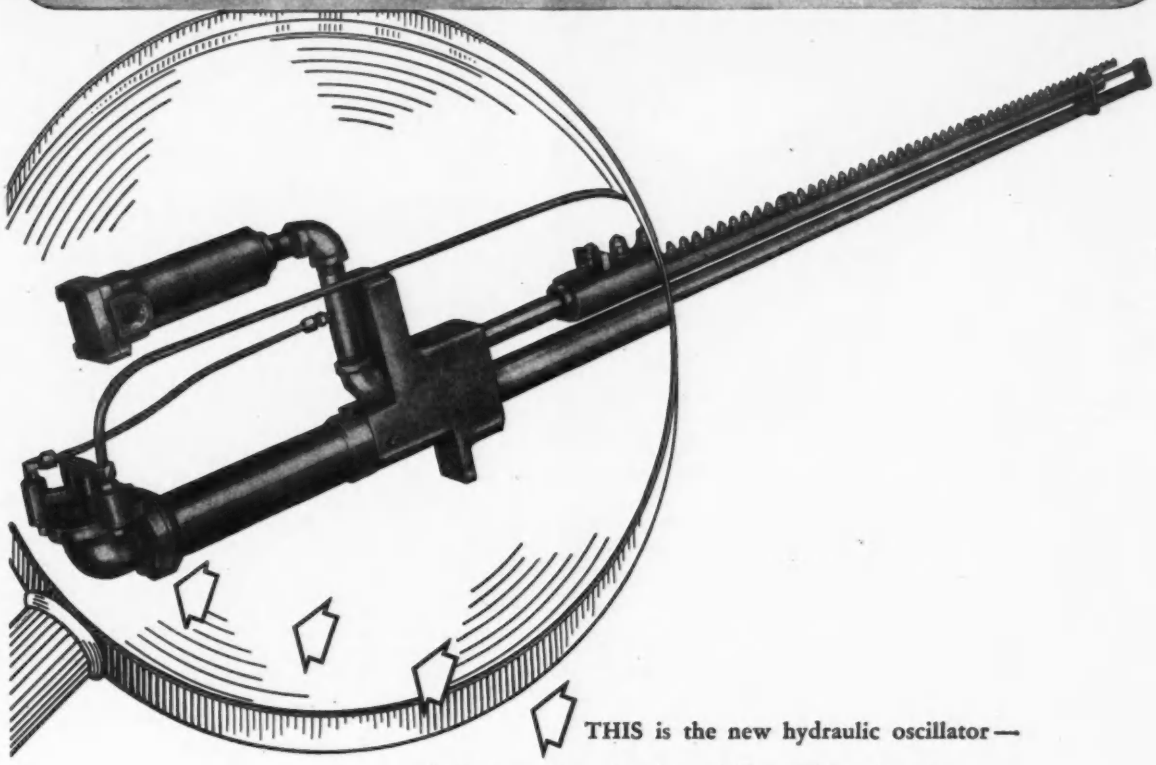
STOCKS

	High	Low	Last
Great Northern Paper Co.	44⅝	43½	43½
Taggart Corp.	10⅝	9⅞	10⅛

BONDS

American Writing Paper Co., 6s '61	102	102	102

THE BROUGHTON S-13-H SHOWER is now *Hydraulically Oscillated*



THIS is the new hydraulic oscillator — built-in, automatic, dependable. Driven by the same water that passes through the shower, all electrical or power shaft connections are eliminated and installation is quick and simple in any head box cylindrical screen. There is no water waste, for even the discharge from the oscillator (less than one gallon per minute) is reused to lubricate the deckle strap! For more details of the benefits and savings you can derive from the patented S-13-H write for complete descriptive bulletin.

A. E. BROUGHTON & COMPANY, *Glens Falls, N. Y.*

We also manufacture the S-10-H Oscillating Showers for cleaning cylinder moulds, felts, Fourdriniers, etc., and Unit Vacuum Controls for paper machine suction boxes.

Package Machinery Reports to Staff

EAST LONGMEADOW, Mass. — The Package Machinery Company has launched a new policy designed to promote better teamwork between management and labor by sending individual letters to each worker outlining in detail the present state of company affairs and problems that must be met jointly by both in the future.

In setting up the policy, President George A. Mohlman said: "This additional method of keeping our people better informed on company affairs of our fellow workers. Teamwork has resulted from the existing teamwork proved to be the priceless ingredient of our success throughout the years. The best assets we have are the people in the plant, who, whatever their work may be, feel just as responsible for our dollars of profit as do the salesmen in the field or the executives at their desks. Therefore, they are entitled to an opened-office and an open-book policy."

President Mohlman's first letter to each worker, giving a forthright outline of the company's present position, follows:

"I hope you had a good vacation, as it does us all good to get a complete change at least once a year. Now that we are all back to work again, I want to begin keeping you better informed on the important developments in our business. The Package Machinery Company furnishes a livelihood to your family and mine. I know that you are just as much interested in our company's success as I am, because its success depends on our cooperative effort. Therefore, from time to time—not necessarily at regular intervals—you may expect to hear from me about our company affairs, be they good or bad.

"Here is where we stand today: We have a backlog of unfilled orders of about $8,500,000 and additional orders are continuing to come in at a satisfactory rate. Our greatest problem with this large group of unfilled orders, is to make reasonable deliveries. In these uncertain times, we naturally get some cancellations. And the later we are on deliveries, the greater the chance that the customer will cancel. You have seen the efforts we are making to remove the production bottlenecks. If you see any others, we welcome your suggestions, and we want your help in getting out a record volume of shipments over the next year. Maintaining a high level of production works to everybody's advantage.

"Everyone connected with the management of the company feels proud to be associated with a team that has done the job you have done these past six months; first working under the crowded conditions in the old shop; then helping to make the move in such a way that we lost only a total of one day's production; and finally turning to in our new home and helping to make a smoothly operating organization.

"Together, we have done a good job and are fortunate that we make a product for which there is a continuing demand, in contrast to some of the other products manufactured in this area. The company is making reasonable profits and because of our steady growth, we are hiring more people. As a group, our people in this factory are enjoying the largest take-home pay in the area. You can feel secure in your jobs, because you are sure of steady employment as far into the future as we can see.

"On the other hand, our cash position is very tight. The large volume of business now with us and ahead of us means that we must carry a large inventory of supplies, such as castings, commercial parts, etc. The more business we book, the larger this inventory must be, and all these supplies have to be paid for in cash. Right now, our inventory is running about $3,400,000 as against only $600,000 in 1939. This inventory which we buy with cash does not bring money back into the company until you finish machining the parts, putting them together, and shipping them out.

"Shipments have been increasing steadily since we moved into our new plant. July actually passed $500,000 and September should be even better. With your continued help, we can keep production at this rate of six million dollars a year. At this level, our profits should be very satisfactory, and I will write you a letter on that subject later on this year. A large part of our income, however, goes into paying interest on the money we have borrowed and also paying the installments of principal which the banks quite properly insist on. Then, too, the sinking fund required for the purposes of retiring the outstanding preferred issue of $1,750,000 preferred stock, all of which continues to make our cash position tight, and the more business we get, such as the 216 machines for Reynolds Tobacco Company the tighter it gets because we have to purchase raw materials, machine and assemble them, which increases our inventories long before we begin shipping the completed machines and collecting money for them.

"So, to sum up-this report has been a lengthy one, to make clear to you the mighty big and very important job that we have to keep all branches of the business in balance—sales, engineering, finance and manufacturing. Our factory people, as a group, have the largest take-home pay in this area; there has been a steady and growing demand for our company's products; and we want to continue to enjoy this healthy business life. That is why we want your help in increasing shipments and decreasing costs. We've had your splendid cooperation in the past; and we need it even more right now."

Blank Book Broadens Its Retirement Plan

HOLYOKE, Mass.—The insured retirement plan in effect at the National Blank Book Company for the past several years has been broadened to cover a large number of salaried employes, it has been announced by Richard P. Towne, treasurer of the National Blank Book Co.

The revision was adopted to extend cooperative benefits to all salaried employes who have completed five years of continuous service there and are between the ages of 35 and 64½.

Specific contributions by employes in the future will be made on the following basis: Each member will contribute 2 per cent of his earnings up to $3000 a year; a member whose earnings are over $3000 a year will contribute 2 per cent of the first $3000 of his earnings and 5 per cent in excess of his earnings over $3000 each year.

Contributions by the company will continue to exceed those made by the employes and in addition, without cost to the employes, the company is contributing a supplementary amount to provide for past service of all eligible employes.

The Atena Life Insurance Company is handling the plan. It is so worked out that with social security this will provide income approximating 50 per cent of the average salary received by the employe after 30 years of participation. Benefits to the participants will never be less than their own contributions plus interest.

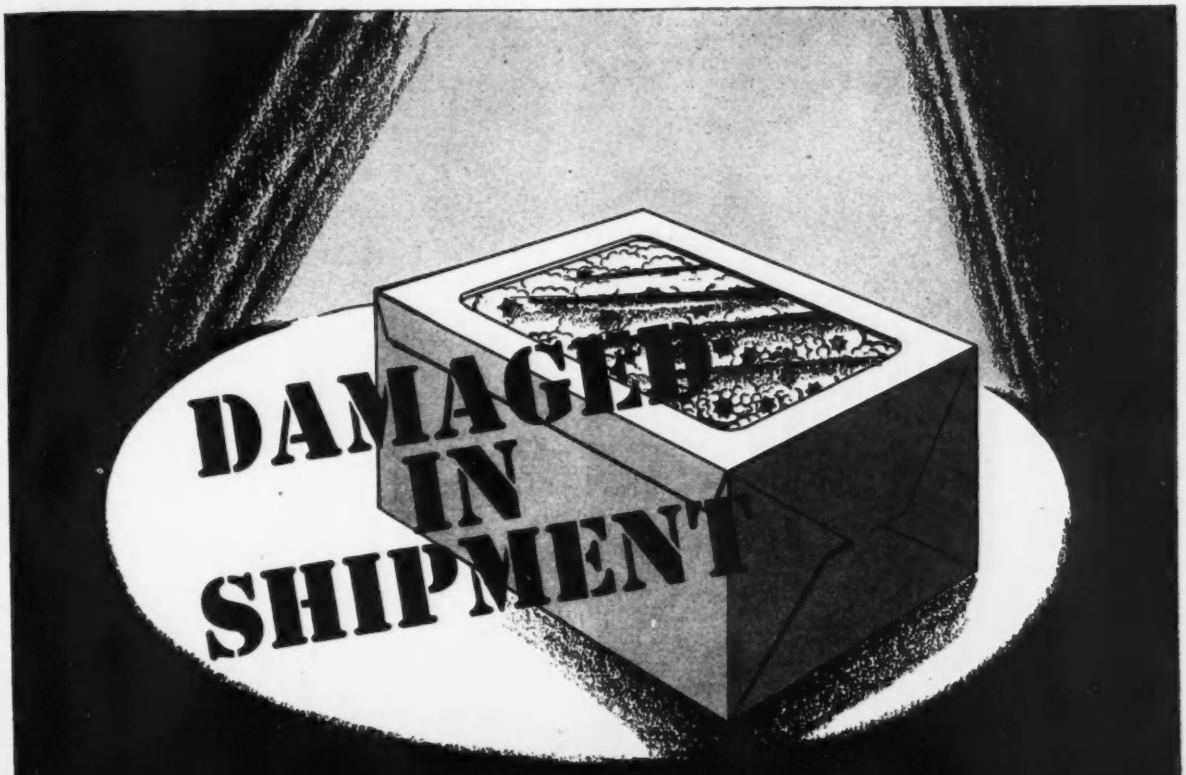
Papermakers Accept Smith Wage Offer

LEE, Mass.—Representatives of Local 78, International Papermakers Union, have accepted the final offer of Smith Paper Inc. for a blanket increase of ten percent with a minimum floor of eight cents an hour. The final offer was made at a labor-management session and the union accepted the following morning.

Otherwise, the new contract with the company is about the same as the old one—with a few minor changes.

The union had asked for a 13 percent increase and the company offered eight percent in the initial negotiations. Conciliator was Charles Ray of the U. S. Department of Labor Conciliation Division.

Labor was represented by Fred J. Rochford and John Jones, international officers of the union, and Thomas McGinty of the Lee local. The company agents were A. L. Pritchard, personnel director of the Brown-Williamson Tobacco Company of Louisville; Harold Martin, a labor relations counsel of Holyoke; C. J. Donahue, secretary-treasurer of the Smith Paper Inc., and Emmet Hill, a member of the company's negotiations committee.



No, you can't see it but nevertheless food products often are damaged in shipment due to bacteria-spoiled food container papers and boards. Milk cartons and bottle caps, butter cartons, packaged meat wrappers, frozen food containers — to name only a few — should be made from sterile paper and board — materials best sterilized with W & T chlorination — to prevent off-flavors and bacterial spoilage.

It isn't enough to just deliver paper or board that's free from pathogenic bacteria. To maintain your customer product quality — to help him meet the demand for attractively packed, wholesome, full-flavored food products, you must also deliver package paper or board free from the so-called harmless bacteria that may impart objectionable tastes and odors to the packaged product.

W & T Chlorination Specialists will be glad to help you find and stop the "hidden losses" — rejections, complaints, reduced volume — due to bacterial spoilage in your food paper production. With over thirty years' experience in chlorination and water treatment, they will be glad to study your particular problem and recommend equipment specifically suited to your needs. Write today without obligation.

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I-2

Diamond Match Averts Threatened Strike

SPRINGFIELD, Mass.—A strike that has been threatening at the Diamond Match Company, plant here, has been averted with representatives of the firm and the engineers union conferring by telephone and coming to an agreement which will be signed almost immediately.

Coming almost simultaneously with the effective date of the Taft-Hartley Law, the agreement was reached just on the eve of the federal labor law's enactment, and thus the closed shop at the plant will be continued.

It is reported from reliable authority that the settlement was made on the basis of a wage boost of eight cents an hour. The union originally had demanded an increase of 15 cents an hour.

Associate Commissioner Benjamin G. Hull of the State Department of Labor, a member of the State Board of Conciliation and Arbitration which had intervened in the labor dispute, asked Cornelius J. Ryan, recently appointed international representative of the Stationary Engineers and Firemen's Union, AFL, to confer at his State House office, during which time Hull telephoned Joseph J. Duffy, general executive of the match company, at New York City. During the ensuing telephone conversation, the amicable agreement was reached on all disputed points.

Slated to sign the contract for management will be C. H. Sickmon, plant manager, while H. J. McDonald, plant engineer, will sign the contract for Local 602.

Moore and Thompson Dispute Is Ended by Agreement

BELLOWS FALLS, Vt.—In a three-hour conference between a union negotiating committee and officials of Moore & Thompson Paper Company, an agreement was reached on a disputed clause that had previously prevented the signing of a 1947 contract, and that had threatened a strike at the plant.

The compromise worked out by the company, and accepted by the union on the eve of enactment of the stringent provisions of the Taft-Hartley labor law, the company agreed to pay six weeks' overtime wages to 22 employes for Sunday work starting May 5, the date when an arbitrator's decision on the interpretation of the disputed clause was made in favor of the union. One more paid holiday was agreed upon, making a total of five paid holidays to be observed during the year.

At a meeting prior to agreement on the point in dispute, the union had asked that the company pay the men retroactively from May 5 to the date of the signing of the new contract. The union also sought two more paid holidays in the 1947 contract.

The contract demands of the union, including a 10-cent-an-hour wage increase and three weeks' vacation for employes with 20 years' service or over, had previously been negotiated to a successful agreement.

New A.P.W. Contract Becomes Effective

ALBANY, N. Y. — A new contract, already in effect, has been signed by the APW Products Company and Albany Local 178, International Brotherhood of Papermakers (AFL), providing wage increases, an extra holiday and modification of a provision of the Taft-Hartley Law.

A joint statement by Julius A. Fincken, company vice-president, and Patrick Harte, union local president, revealed a stipulation in the contract protects the union from damage suits for work stoppages that might result from unauthorized strikes by union members.

An increase of 12 cents an hour became effective September 1 for 400 employes. In addition, rate adjustments of 5 cents to 22 cents an hour have been made in some jobs. The added holiday with pay brings the total to five a year.

The damage suit provision sets forth the company shall seek no financial redress from the union for irresponsible acts of individual union members who may walk out without strike sanction by the international union. In consideration of this provision the union guarantees to seek immediate return of such workers to their jobs. The company may impose disciplinary measures against employes engaged in unauthorized strikes.

Marathon Grants Wage Adjustment

MENASHA, Wis. — Marathon Corporation has granted a general wage increase of six cents per hour, effective August 4, as the result of recent negotiations. Special wage adjustments also were made effective for certain shift workers and to cover Sunday and holiday work.

Covered by the agreement are all employes under the jurisdiction of the International Brotherhood of Paper Makers and the International Brotherhood of Pulp, Sulphite and Paper Mill Workers. The agreement was announced jointly by R. J. Sund, Marathon vice-president in charge of manufacturing; Emil Noren, area director of the Paper Makers, and Ray Richards, vice-president of the Pulp and Sulphite Workers.

The increase affects employes at the Menasha, Rothschild, Wausau and Ashland, Wis., and the Menominee, Mich., plants. It provides base pay of $1.06 per hour for men and 94 cents per hour for women.

Carthage Mills Signs New Wage Contracts

CARTHAGE, N. Y.—Crown Zellerbach Corporation, National Paper Products Company division, has signed an agreement with the International Brotherhood of Paper Makers, Local 93, and the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, Local No. 118, both A. F. of L. unions, which gave substantial increases in pay, retroactive to July 1, the start of the contract year.

Representatives of the two International unions and the two locals who signed the agreement were: Floyd E. Van Deusen, International representative of the Brotherhood of Pulp, Sulphite and Paper Mill Workers, and Victor La Rue, president of Local No. 118 of that union; and James A. Call, International Brotherhood of Paper Makers, and Leon Des Jardins, president of Local No. 93 of the same brotherhood. For the corporation, Raymond J. Schadt, resident manager, signed.

The company granted an increase of 18 cents per hour, for male employes, which increase included a six percent voluntary supplement which has been in effect since Jan. 13, 1947. This increase establishes a dollar an hour base pay.

Female employes were established on a firm hourly rate of 88 cents, 89 cents and 90 cents per hour.

Converting plant male employes' job rates have been adjusted upward at least by the 18 cents and have been established on a sounder basis by job analysis.

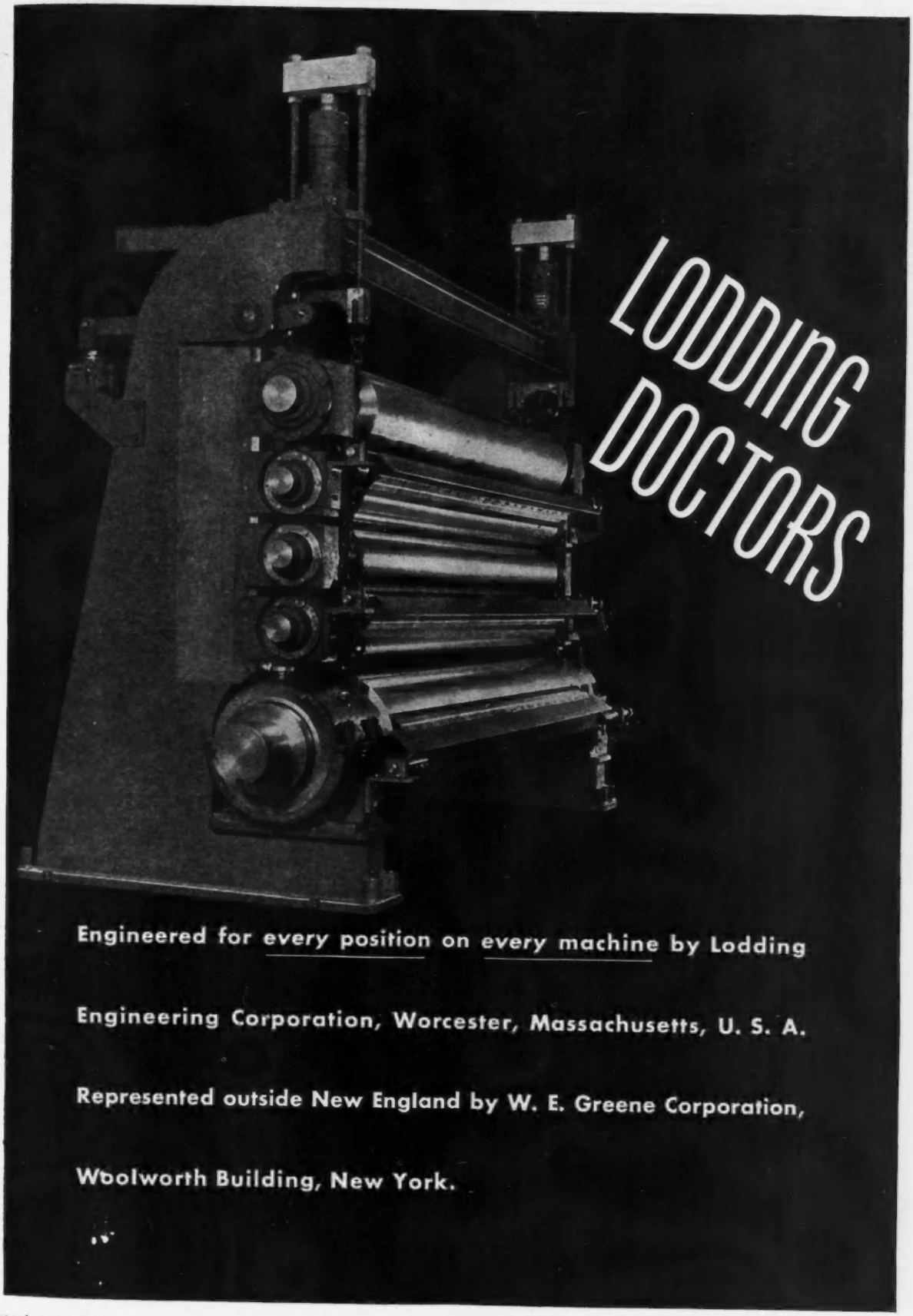
The incentive plan, used in the converting plant, is being revised to conform to present day operations and to remove inequities.

Three holidays with pay, namely, July 4th, Labor Day and Christmas, were granted as well as double time for Sundays.

Kimberly Foremen Hear Talk on Safety

KIMBERLY, Wis. — The Kimberly Foreman's club heard a talk August 18 by A. J. Courchane, safety director at the local mill of Kimberly-Clark Corporation. He discussed the new safety organization. Norman S. Moe of the legal department gave a short talk on the development and growth of unionism in the United States. The mill's new safety organization is divided into a steering committee and six subcommittees—publicity, engineering, investigation, traffic and storage, training and contest.

C. F. Bouressa, Foreman's club president, announced that the next meeting will be held September 8, and that I. W. Kersten, director, and William J. McDonald, new club president, would attend the National Association of Foremen convention in California later in the month.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Engineering Corporation, Worcester, Massachusetts, U. S. A.
Represented outside New England by W. E. Greene Corporation,
Woolworth Building, New York.

IMPORTS

NEW YORK IMPORTS

WEEK ENDING AUGUST 30, 1947

SUMMARY

Newsprint	7682 rolls
Coated Paper	22 cs.
Wallpaper	7 cs.
Writing Paper	1 cs.
Wrapping Paper	800 rolls
Printing Paper	45 bls., 56 cs.
Gummed Paper	98 cs.
Tissue Paper	10 cs.
Insulating Paper	30 cs.
Rice Paper	10 cs.
Photo Paper	3 cs.
Paper Napkins	15 bls.
Strawboards	56 rolls

NEWSPRINT

News Syndicate Co., Benjamin Lundy, Baie Comeau, 6265 rolls.

H. G. Craig Co., A.C.D., Donnacona, 322 rolls.

R. A. Olsen & Co., G.T.D., Donnacona, 378 rolls.

H. G. Craig Co., Donnacona, 329 rolls.

R. A. Olsen & Co., Newscarrier, Donnacona, 388 rolls.

COATED PAPER

F. P. Gaskell & Co., Eucadia, Glasgow, 22 cs. (for cigarette tips).

WALLPAPER

All Transport, Inc., De Grasse, Havre, 5 cs.

Kersten Shipping Co., Durango Victory, Havre, 2 cs.

WRITING PAPER

American Express Co., De Grasse, Havre, 1 cs.

WRAPPING PAPER

Clinton Paper Corp., Fort Amherst, St. Johns, 800 rolls.

PRINTING PAPER

D. C. Andrews & Co., Frierfjord, Oslo, 45 bls.

Oxford University Press, Mary Austin, Liverpool, 56 cs.

GUMMED PAPER

B. F. Drakenfeld & Co., American Importer, Liverpool, 74 cs.

B. F. Drakenfeld & Co., Mary Austin, Liverpool, 24 cs.

TISSUE PAPER

B. F. Drakenfeld & Co., American Importer, Liverpool, 10 cs. (pottery).

INSULATING PAPER

Stevens Nelson Paper Co., American Flyer, Kobe, 30 cs.

RICE PAPER

F. Posner, American Flyer, Kobe, 10 cs.

PHOTO PAPER

J. J. Gavin & Co., Koloa Victory, London, 3 cs. (unsensitized).

PAPER NAPKINS

H. W. Robinson & Co., Koloa Victory, London, 15 bls.

STRAWBOARDS

Guaranty Trust Co., Norwalk Victory, Antwerp, 56 rolls.

RAGS, BAGGINGS, ETC.

E. J. Keller Co., Inc., Norwalk Victory, Antwerp, 91 bls. old bagging.

E. J. Keller Co., Inc., Exporter, Alexandria, 355 bls. old bagging.

———, Exporter, Alexandria, 90 bls. old hessian bagging.

Continental Bank Trust Co., Exporter, Alexandria, 164 bls. hessian tares; 65 bls. old bagging.

———, Exporter, Alexandria, 113 bls. old hessian bagging.

American Cotton Products Co., Bali, Shanghai, 100 bls. cotton waste.

A. De Vries Trading Co., Gainesville Victory, Antwerp, 57 bls. old scrap bagging.

Tradesmans National Bank Trust Co., Koloa Victory, London, 70 bls. old webbing.

OLD ROPE

International Purchasing Co., Frierfjord, Oslo, 105 coils (old manila).

———, Uruguay, Copenhagen, 90 coils.

GLUESTOCK, ETC.

H. Remis, Brazillian Pronce, Santos, 28 bls., 50 rolls gluestock.

John Gorvers, Cape Isabel, Barranquilla, 878 bls. hidecuttings; 104 bls. split trimmings; 105 bags cattle pieces.

H. Remis, Santa Eliana, Barranquilla, 215 rolls gluestock.

John Gorvers, Santa Eliana, Barranquilla, 17 rolls hidecuttings.

WOODPULP

Bulkley Dunton Pulp Co., Braheholm, Sundsvall, 1098 bls. dry sulphite pulp.

Perkins Goodwin & Co., Braheholm, Sundsvall, 2400 bls. prime strong unbleached sulphite pulp.

Cellulose Sales Co., Braheholm, Sundsvall, 150 bls. kraft sulphate pulp.

Cellulose Sales Co., Braheholm, Siderhamn, 675 bls. air dry sulphite pulp.

CASEIN

American British Chemical Supplies, Mormacland, Buenos Aires, 1000 bags (lactic).

Casein Co. of America, Div. of The Borden Co., Mormacland, Buenos Aires, 3000 bags (ground lactic).

American Cyanamid & Chemical Corp., Mormacland, Buenos Aires, 500 bags (ground lactic).

ALBANY IMPORTS

Bulkley Dunton Pulp Co., Braheholm, Sundsvall, 3906 bls. dry sulphite pulp.

Cellulose Sales Co., Braheholm, Sundsvall, 5750 bls. kraft sulphate pulp; 1500 bls. dry sulphite pulp.

Cellulose Sales Co., Braheholm, Soderhamn, 10,601 bls. air dry sulphate pulp; 4275 bls. air dry sulphite pulp.

BALTIMORE IMPORTS

Gottesman & Co., Inc., Devils Lake Victory, Iggesund, 200 bls. bleached kraft, 750 bls. unbleached kraft.

Gottesman & Co., Inc., Tidaholm, Wifstavarf, 4500 bls. unbleached sulphite.

Gottesman & Co., Inc., Consul Corfitzon, Iggesund, 1750 bls. bleached sulphite; 2000 bls. bleached kraft.

PORTLAND IMPORTS

Pahel Horton & Co., Inc., Oscar Borgesson, Hornefors, 1068 bls. dry sulphite pulp.

Cellulose Sales Co., Oscar Borgesson, Obbola, 7000 bls. dry sulphate pulp.

Cellulose Sales Co., Oscar Borgesson, Stugsund, 125 bls. air dry sulphite pulp.

Cellulose Sales Co., Oscar Borgesson, Waija, 840 bls. air dry sulphate pulp; 150 bls. air dry sulphite pulp.

J. Andersen & Co., Oscar Borgesson, Sandarne, 1000 bls. woodpulp.

Cellulose Sales Co., Oscar Borgesson, Sandarne, 1750 bls. air dry sulphate pulp.

BOSTON IMPORTS

Jay Madden Corp., Vasaholm, Rauma, 70 rolls wrapping paper.

Pulp Sales Corp., Vasaholm, Rauma, 150 bls. prime strong bleached sulphite pulp; 359 bls. prime strong unbleached sulphite pulp; 3310 bls. prime extra strong bleached sulphite pulp.

Pulp Sales Corp., Vasaholm, Kotka, 2649 bls. prime unbleached sulphite pulp; 148 bls. prime bleached sulphite pulp.

National City Bank, Vasaholm, Kotka, 1905 bls. white dry mechanically ground woodpulp.

Cellulose Sales Co., Oscar Borgesson, Sandarne, 2125 bls. air dry sulphate pulp.

Cellulose Sales Co., Oscar Borgesson, Stugsund, 2000 bls. air dry sulphite pulp.

Pagel Horton & Co., Inc., Oscar Borgesson, Hornefors, 4416 bls. dry sulphite pulp.

Cellulose Sales Co., Oscar Borgesson, Obbola, 10,850 bls. dry sulphate pulp.

Gottesman & Co., Inc., Oscar Borgesson, Waija, 2438 bls. 1st qual. kraft sulphite pulp.

Cellulose Sales Co., Oscar Borgesson, Waija, 450 bls. air dry sulphite pulp.

Perkins Goodwin & Co., Oscar Borgesson, Waija, 914 bls. half prime bleachable sulphite pulp.

Gottesman & Co., Inc., Ragnhildesholm, Iggesund, 1000 bls. bleached sulphite; 2250 bls. bleached kraft; 250 bls. unbleached kraft.

PHILADELPHIA IMPORTS

American Cyanamid & Chemical Corp., Mormacland, Buenos Aires, 2500 bags lactic casein.

Pulp Sales Corp., Vasaholm, Rauma, 1950 bls. prime strong unbleached sulphite pulp; 7350 bls. prime bleached kraft sulphite pulp; 700 bls. prime bleached greaseproof sulphite pulp;

(Continued on page 32)

How much is a valve worth?

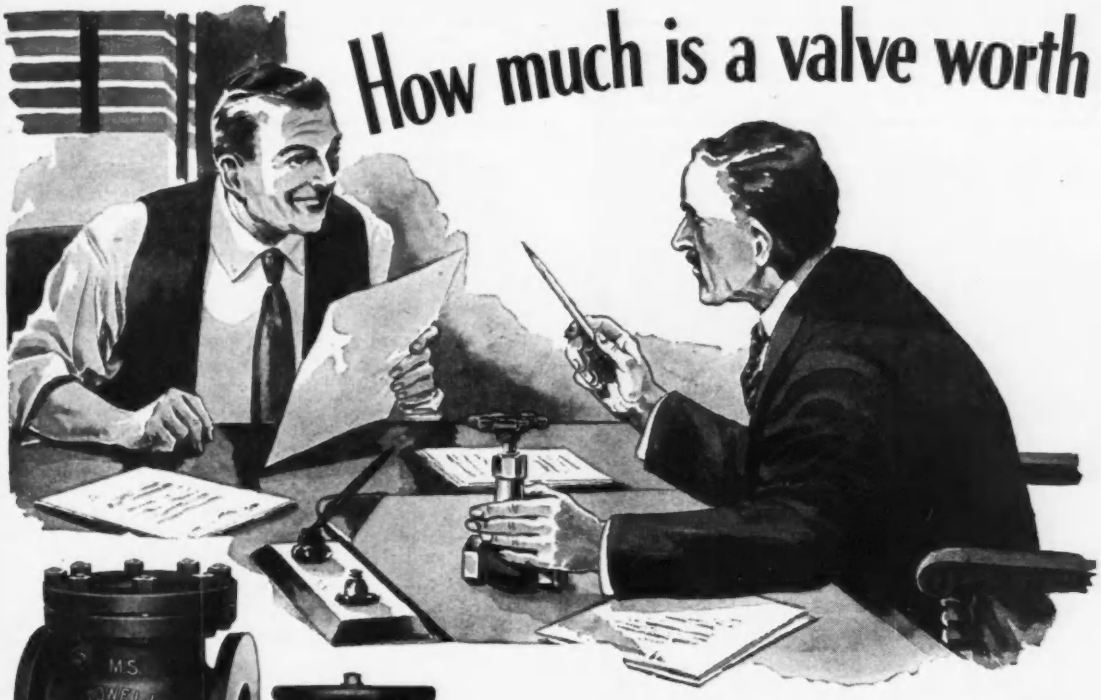


Fig. 1259—125-pound All Iron Swing Check Valve with bolted flanged cap, flanged ends and regrindable, renewable iron disc. Disc, when wide open, permits full, unobstructed flow through valve body.

Fig. 457—125-pound All Iron Globe Valve with flanged ends, bolted flanged yoke, outside screw rising stem and regrindable, renewable iron seat and disc.

Fig. 1816—125-pound All Iron Gate Valve, with flanged ends, bolted flanged yoke, outside screw rising stem and taper wedge solid disc.

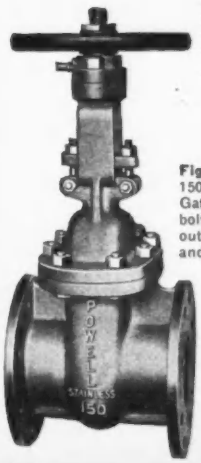


Fig. 2453-G—New, standard 150-pound Stainless Steel Gate Valve with flanged ends bolted flanged yoke-bonnet, outside screw rising stem and taper wedge solid disc.

The $64 question is not "what is the price of the valve," but "how much is it worth?"

And the measure of its worth is "will it do the job, how long will it give satisfactory service, and what will be the ultimate cost of maintenance?" For in addition to the cost of labor and materials in maintaining a valve, don't lose sight of the serious loss in production while a valve is "down" for repairs or replacement.

The Powell Line is so complete* that there's always a Powell Valve specifically adapted to do the job. Powell Valves are noted for long-life, satisfactory service. Powell Valves are designed to reduce maintenance and shut downs to a minimum.

*The Powell Line includes Bronze and Iron Valves of every required type, design, size and pressure; Cast Steel Valves of every type, in pressure classes from 150 to 2500 pounds; and, for the chemical and process industries, a complete line of Corrosion-Resistant Valves in the widest range of pure metals and alloys ever used in making valves.

Powell Valves for handling black liquor, white liquor, green liquor, etc., are available in all iron, iron body with bronze trim and iron body with special alloy trim.

The Wm. Powell Company
Cincinnati 22, Ohio
DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES

POWELL VALVES

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, September 3, 1947.

Demand for paper and paperboard continues strong, although consumers are considerably more selective and cancellations more frequent. Despite this apparent easing both integrated and non-integrated mills still have a backlog of unfilled orders on their books. Paper and paperboard reaching converters is still far short of meeting demands. Most members of the industry report they have not been seriously affected by diminishing demand and they expect either a leveling off or a reversal of the trend with new fall orders. Integrated mills producing groundwood printing, book and fine papers are still operating at capacity. Production of the non-integrated mills continues to be curtailed by shortages of bleached sulphite pulp. In the coarse paper field kraft wrapping remains in particularly short supply although certain other grades are reported as being somewhat easier to obtain in some areas. Supplies of paper and paperboard items in wholesale channels show mixed trends. Napkins and facial tissues continue to be reported more plentiful, while kraft, book and toilet tissues continue scarce. There is still a great demand for cheap paper although certain consumers, like printers, are beginning to be more conscious of quality and are attempting to improve their inventory position in this respect. . . . In the period from March 1 to July 5 the composite index of paper and pulp wholesale prices rose 7 percent according to the Bureau of Labor Statistics. Much of the increase in the composite index of pulp, paper and paperboard prices can be attributed to the increase in pulp prices, which rose 2.3 percent from April to May. The index of paper prices rose 1.2 percent while that of paperboard rose only 0.4 percent. Prices of waste paper, not included in the paper and pulp index, declined sharply in May. This decline spread to the major grades of waste paper. In some instances waste paper prices in May were below last year's prices. Waste paper prices, however, are still considerably above their prewar levels. The index of composite prices for pulp, paper and paperboard rose 34 percent from May 1946 to May 1947. The price index of wood pulp, principal raw material consumed in the manufacture of paper and paperboard, rose 45 percent from May 1946 to May 1947. During the same period the price index of paper rose 27 percent while that of paperboard rose 49 percent.

The index of general business activity for the week ended August 23 declined to 144.3 from 145.7 in the preceding week, compared with 136.4 for the corresponding week in 1946. The index of paperboard production declined to 172.5 from 179.2 in the previous week, compared with 163.2 for the corresponding week in 1946.

Paper production for the week ended August 23 was estimated at 103.7 percent, compared with 104.8 for the preceding week, with 106.1 for the corresponding week in 1946, with 106.1 for the corresponding week in 1946, with 95.4 for 1945, with 92.2 for 1944, and with 91.2 percent for the corresponding week in 1943.

Paperboard production for the week ended August 23 was 100.0 percent of capacity, compared with 100.0 percent for the preceding week, with 100.0 for the corresponding week in 1946, with 99.0 for 1945, with 96.0 for 1944, and with 96.0 percent for the corresponding week in 1943.

Adaption of a waterproof paper, developed during the war for floating supplies ashore to troops, has proved successful in a wide variety of packages for export goods. Use of the paper for flour sacks reduces loss at sea by water damage in storms and the paper can be utilized for packaging any dry bulk commodity. The paper also is highly resistant to tear and has proved to be durable and easy to handle. . . . Imports of paper, paperboard and paper products totaled 363,515 tons in June, higher than in any previous month this year. Exports dropped 5,309 tons from May to June, totaling 36,088 tons. The Office of International Trade reports paper imports of 358,864 tons made up most of the total incoming shipments. There were 4,368 tons of paperboard and 283 tons of paper products to complete the figure. Newsprint imports also reached the highest level of the year. The June total amounted to 349,134 tons, above May by 20,387 tons. Pulpwood imports gained 88,977 tons over May and wood pulp imports registered a 52,179 ton increase in the same period. Of total June exports, paper amounted to 17,770 tons, paperboard 8,425 tons and paper products 9,893 tons. Newsprint exports in June rose 664 tons over May to 2,289 tons, while shipments of wood pulp amounted to 7,951 tons, a drop of 6,210 tons below May.

British newspapers are either cutting down on their circulation while maintaining their accustomed number of pages, or reducing the number of pages per issue in order to comply with current newsprint consumption restrictions. The British government's position in regard to the necessity for reducing newsprint consumption, and thereby imports in order to conserve exchange was supported in Commons by a vote of 2 to 1, notwithstanding widespread criticism of the measure when it was pending. The order, which became effective July 21, is now expected to save only £1,000,000 during the next six months, which is but a light fraction of the gap between the value of imports and exports. The measure is being criticized as endangering the future supply of newsprint from Canada. Fears are expressed that it might prove difficult to reinstate orders at the Canadian mills where orders are cancelled or deliveries postponed. British mills had difficulty placing long-term contracts with Canadian mills last year. North American supplies are vital to the British press, since North America is the only source which can be considered as immune from risk. The Scandinavian woodpulp supply, upon which British newsprint manufacturers depend, is characterized as precarious and expensive. Furthermore, it must be purchased with hard currency. Canadian newsprint is priced in the United Kingdom at £30 per long ton (2,240 pounds), whereas British newsprint manufactured from Scandinavian wood pulp is priced at £40 per ton.

Wood Pulp

Market pulp prices continue to be quoted considerably above current contract prices. Offerings of bleached sulphite ranging from $180 to $225 per ton are not uncommon. Buyers at these prices must be getting harder to find, however, because such offerings are repeated time and again in large advertisements in daily newspapers and the trade press.

Meanwhile market pulp mills are confronted with the disturbing prospect that a substantial portion of the pulp now produced for sale by integrated mills may be used in their own production of paper and board as soon as additional equipment already contracted for becomes available. Coupled with this development, which does not appear to have materialized as yet in any important degree, is the fact that no significant additions are contemplated in the capacity for independent pulp production during the near future.

Rags

Paper mill demand for rags remains steady with supplies still restricted. Bleachable khaki at $6.50 per 100 pounds delivered to the mills plus dealer's commission, and white shirt cuttings at $11.50 to $12 are still the strongest items among new domestic cotton cuttings.

Mills are a bit more reluctant to pay top prices for old domestic cotton rags, unless they prove to be first quality. No. 1 whites repacked cotninue at $4.50 per 100 pounds f.o.b. shipping point plus dealer's commission. Blue overalls are $3.75; and No. 1 roofing rags $1.65.

(Continued on page 28)

What is the Major Aim of Your Maintenance Program—

Avoid Excessive Wear---Keep maintenance costs down with Gulf Quality Oils and Greases

THE ability to make fast, efficient repairs is of course a vital function of any maintenance department. But for maximum plant efficiency, the emphasis should be on prevention of excessive wear and breakdowns.

The most important single factor in preventive maintenance is proper lubrication. Scientific application of high quality lubricants prevents excessive wear, helps avoid time-consuming repairs and invariably results in substantial reductions in maintenance costs.

For effective assistance in installing the kind of lubrication practice that puts you on the "prevent" —or dollar saving—side of the picture, call in a Gulf Lubrication Engineer. He will offer concrete suggestions that will help you get higher machine efficiency, reduced down time, and lower maintenance costs. Write, wire, or phone your nearest Gulf office today.

Gulf Oil Corporation · Gulf Refining Company

Division Sales Offices:

Boston · New York · Philadelphia · Pittsburgh · Atlanta
New Orleans · Houston · Louisville · Toledo

GULF INDUSTRIAL LUBRICATION

PRICES

With the elimination of price controls on paper, pulp, rags and other materials, the quotations given below once more become indicative of trends in an open market. At the moment they can be of little more, for, while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—

Roll, contract	$87.50	to	$90.00
Sheets	$109.00	"	—

Kraft—per cwt.—Carload Quantities

Zone A, Delivered 40 lb. base weight

Superstandard Wrapping	$7.00	to	—
No. 1 Wrapping	6.50	"	6.75
Standard Wrapping	6.00	"	6.25
Standard Bag	5.75	"	6.25

Tissues—Per Ream 24x36 (480) 10 lb. Zone 1.

Wh. No. 1 Frd.	$1.65	to	$1.72
Wh. No. 1 M. G.	1.65	"	1.72
Wh. No. 1½	1.48	"	—
Wh. No. 2	1.55	"	—
Kraft Anti-Tar	1.38½	"	—
Kraft Unbl.	1.85	"	—
Manila No. 2	1.62	"	—

Toilet—Per Case of 100 rolls—1 M Sheets.

Unbleached	$5.50	to	$6.40
Bleached	6.50	"	7.60

Paper Towels—Per Case of 3750—

Zone 1.

Wh. Jr. M'tif'd 9¼x9½	$4.85
Br. Sr. M'tif'd 10x12	3.45
Br. Jr. M'tif'd 9½x9¾	2.95
Br. Jr. Sgl. fold 10x10¾	3.10

Manila—per cwt.—C. l. f. a.

No. 1 Jute Tag	$13.80
Reg. Jute Manila	13.25
No. 1 Manila	9.75

Boards, per ton—

News	$92.50	"	—
Chip	90.00	"	—
Sgl. Mla. Ll Chip*	102.50	"	—
White Pat. Coated*	120.00	"	—
Kraft Liners 42 lb.	95.00	"	—
Binders Boards	126.00	"	—

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2 50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1: Rag Content Bonds and Ledgers—

White, Assorted Items Bonds, per cwt.

	Carton	4 C't'n	Ton
100% Rag Ext. No. 1	$55.00	$50.00	$48.00
100% Rag	46.50	43.00	41.25
75% Rag	35.00	32.50	31.50
50% Rag	31.50	28.75	27.50
25% Rag	28.00	25.50	24.50

Ledgers, per cwt.

100% Rag Ext. No. 1	$54.25	$50.00	$48.00
100% Rag	46.25	42.50	40.75
75% Rag	36.00	33.25	31.75
50% Rag	31.00	28.00	27.00
25% Rag	27.25	24.75	23.75

Sulphite Bonds and Ledgers—White, Assorted Items Bonds, per cwt.

No. 1	$19.25	$17.50	$16.80
No. 2	18.25	16.50	16.00
No. 4	16.75	15.25	14.50

Ledgers, per cwt.

No. 1	$20.25	$18.35	$18.60
No. 2	19.25	17.50	16.80
No. 4	17.75	16.25	15.50

Free Sheet Book Papers—White, Cased Paper

(Per cwt.)	Case	Ton
No. 1 Glossy Coated	$19.40	$18.60
No. 2 Glossy Coated	18.15	17.35
No. 3 Glossy Coated	17.65	17.00
No. 1 Antique (Water marked)	$15.90	$15.25
No. 2 Offset	16.00	14.75
A Grade E. F.	13.90	13.30
A Grade S. & S. C.	14.40	13.70
B Grade E. F.	Nominal	
B Grade S. C.	Nominal	
C Grade E. F.	Nominal	
C Grade S. C.	Nominal	
D Grade E. F.	Nominal	
D Grade S. & S. C.	Nominal	

Wood Pulp

Domestic mill prices delivered with former OPA freight allowances.

	Per Short ADT
Groundwood	$75.00 to $80.00
Unbleached Sulphite	115.00 " 117.00
Bleached Sulphite	121.00 " 125.00
Bleached Soda	115.00 " 120.00
Unbleached Kraft	112.50 " 120.00
Southern Kraft	90.00 " 102.50

Canadian mill Prices delivered with freight allowances unless otherwise specified:

	Per Short ADT
Select Unbleached Kraft (no freight allowance)	115.00 " —
Unbleached Sulphite	115.00 " 117.00
Bleached Sulphite	125.00 " 155.00
Glassine Unbleached Sulphite (no freight allowance)	112.00 " —
Bleached Soda	105.00 " 115.00
Groundwood	75.00 " 80.00
Sideruns Pulping News	75.00 " 80.00
Hardwood and Specialty Grades	Nominal

Swedish Quotations
Ex. dock, New York

	Per Short ADT
Bleached Kraft	$150.00 to 156.00
Bleached Sulphite	151.00 " 158.50
Unbleached Sulphite	121.00 " 131.00
Unbleached Kraft	116.00 " 126.00

Finnish Quotations
Ex. dock, New York

	Per Short ADT
Bleached Sulphite	$165.00
Unbleached Sulphite	132.50
Unbleached Sulphite (special grade)	137.50
Unbleached Sulphate	132.50
Unbleached Sulphate (special grade)	159.00

New Domestic Cotton Cuttings

(Prices delivered Mill Plus Dealer's Commission)

White Shirt	$11.50 to		$12.00
Light Silesias	7.50		
Unbleached Muslin	11.50 "		12.00
White Back Blue Overalls	8.50		
Blue Overalls	7.75		
Unbl. Fancy Shirt	5.00 "		5.50
Light Percales	6.00 "		6.50
Light Prints	5.25 "		5.95
Washables	4.00		
Bleachable Khaki	6.00 "		6.50
Unbleachable Khaki	5.50 "		6.00
Cottonades	5.00 "		5.50

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.
No. 1 Whites Repacked	$4.50
No. 1 Whites Miscellaneous	4.25
No. 2 Whites Repacked	4.00
No. 2 Whites Miscellaneous	3.50
Blue Overalls	3.75
Thirds and Blues Repacked	3.00
Thirds and Blues Miscellaneous	2.50
No. 1 Roofing Rags	1.65
No. 2 Roofing Rags	1.55
No. 3 Jute Bagging	1.45
No. 4 Brussels and hard back carpets	1.45
No. 5A Roofing Rags	1.45

New Foreign Cotton Cuttings

(Prices delivered Mill)

	Per 100 lbs.
New Dark Cuttings	$6.00 to —
New Mixed Cuttings	6.50 " —
Light Silesias	9.00 " 10.00
Light Flannelettes	8.00 " 9.00
New White Cuttings	13.00 " 15.00
Fancy Shirt Cuttings	9.00 " 10.00
Light Prints	8.00 " 10.00
Bleachable Khaki, No. 1	7.00 " 7.50
Unbl. Khaki, No. 1	6.25 " 6.75

Old Foreign Rags

(F.O.B. New York)

	Per 100 lbs.
No. 1 White Linens	$14.00 to 16.00
No. 2 White Linens	12.00 " 13.00
No. 3 White Linens	8.00 " 9.00
No. 4 White Linens	8.00 " 9.00
No. 1 White Cottons	10.00 " 12.00
No. 2 White Cottons	8.00 " 9.00
No. 3 White Cottons	6.50 " 7.00
No. 4 White Cottons	5.00 " 5.50
Extra Light Prints	7.50 " 8.00
No. 1 New Light Prints	6.25 " 6.75
Med. Light Prints	5.25 " 5.75
Dutch Blue Cottons	5.25 " 5.50
Checks and Blues	4.00 " 4.25
Linsey Garments	3.00 " 3.75
Dark Cottons	2.50 " 3.00
Old Shopperies	2.50 " 3.00
New Shopperies	2.50 " 3.00

Bagging

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny, No. 1	$4.75 to 5.00
Domestic Gunny, No. 1	4.25 " 4.50
Light Wool Tares	4.50 " 4.75
Heavy Wool Tares	4.75 " 5.00
Bright Bagging	4.25 " 4.50
Foreign Manila Rope	6.00 " 7.00
Domestic Manila Rope	5.75 " 6.50
Jute Strings	4.50 " 5.00
No. 1 Sisal Strings	5.50 " 6.00
Mixed Strings	1.75 " 2.50

Waste Paper

Prices to Mills
(Dollars Per Ton)
F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	$125.00 to $135.00
No. 1 Hard White Envelope Cuts	110.00 " 120.00
No. 1 Hard White Shavings, unruled	110.00 " 120.00
No. 1 Hard White Shavings, ruled	100.00 " 120.00
Soft White Shavings, one cut	110.00 " 120.00
No. 1 Soft White Shavings	90.00 " 100.00
Soft White Shavings, Misc.	80.00 " 90.00
No. 1 Fly Leaf Shavings	55.00 " 60.00
No. 2 Fly Leaf Shavings	50.00 " 55.00
No. 1 Groundwood Fly Leaf Shavings	30.00 " 33.00
No. 2 Mixed Groundwood Fly Leaf Shavings	(nominal)
Mixed Colored Shavings	(nominal)
Mixed Groundwood Colored Shavings	(nominal)
Overissue Magazines	(nominal)
No. 1 Heavy Books & Magazines	25.00 " 30.00
Mixed Books	15.00 " 30.00
No. 1 White Ledger	75.00 " 85.00
New Manila Envelope Cuttings, one cut	100.00 " 110.00
New Manila Envelope Cuttings	65.00 " 75.00
Extra Manilas	35.00 " 40.00
Mixed Kraft, Env. & Bag Cuttings	75.00 " 85.00
Kraft Envelope Cuttings	100.00 " 105.00
Triple Sorted, No. 1 Brown Soft Kraft	65.00 " 75.00
New 100% Kraft Corrugated Cuttings	75.00 " 85.00
No. 1 Assorted Old Kraft	40.00 " 50.00
New Jute Corrugated Cuttings	27.00 " —
Old 100% Kraft Corrugated Containers	(nominal)
No. 1 News	17.00 " 19.00
No. 1 Mixed Paper	15.00 " 17.00
Box Board Cuttings	16.00 " —
White Blank News	75.00 " 80.00
Overissue News	(nominal)
Old Corrugated	30.00 " 32.00
Mill Wrappers	22.00 " 25.00

Twines

All Prices Nominal
(F. o. b. Mill)
(Soft Fiber)

Coarse Polished—India	.26	@	.29
Fine Polished—Fine India	.31	"	.35
Unpolished—Paper Makers	.20	"	.26
Tube Rope	.22	"	.27½
Wrapping	.26	"	.33½
Cotton	.70	"	—
(Hard Fiber)			
Mex. Sisal	.21	"	.24
Manila	.33	"	—
(Hemp)			
Polished Hemp	.63	"	—

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—New White No. 1	.10½	@	.11
New White No. 2	nominal		
Light Silesias	.07½	"	.08
Black Silesias, soft	.06½	"	.07
New Unbleached	.10½	"	.11¼
Washable Prints	.06½	"	.07
Washable No. 1	.05	"	.05½
Blue Overall	.07½	"	.08
Cottons—According to grades—			
Washable Shredding	.03½	"	.04
Fancy Percales	.06¾	"	.07¼
New Black Soft	nominal		
Khaki Cuttings—Unbleachable Cotton Cuttings	.05½	"	.06
Bleachable Cotton Cuttings	.06½	"	.07
Men's Corduroy	.05½	"	.06
Ladies' Corduroy	.05	"	.05½
Cottonades	.05½	"	.06

Domestic Rags (Old)

(F.O.B. Eastern Shipping Point)

White No. 1—Repacked	4.50	@	5.00
Mixed White	4.00	"	4.25
White No. 2—Repacked	3.50	"	3.75
Thirds and Blues—Miscellaneous	2.25	"	2.50
Repacked	2.75	"	3.00
Roofing Stock—Foreign No. 1	nominal		
Domestic No. 1	1.65	"	2.05
Domestic No. 2	1.55	"	1.95
Roofing Bagging	1.45	"	1.95
Old Manila Rope	5.75	"	6.00

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1—Foreign	nominal		
Domestic	4.25	@	4.50
No. 1 Clean Bright—Sisal Strings	.04	"	.04½
No. 2 Clean Bright—Sisal Strings	.03	"	.03¼
Sisal Jute	.02¾	"	.03
Scrap—No. 1	3.25	"	3.50
No. 2	1.75	"	1.85

INTERESTING FACTS ABOUT PAPER

Paper, deriving its name from papyrus, the Egyptian water plant, was first developed by the Chinese about 105 A.D. They made it from mulberry bark, bamboo and old fish nets, and they kept their process secret from the rest of the world for several hundred years.

INTERESTING FACTS ABOUT DIRECT CHINOLINE

DIRECT CHINOLINE is the brightest and greenest direct yellow. Possessing excellent solubility, level dyeing and good light fastness, it is recommended for use in coloring bond, book and cover papers to produce bright yellows or greens in combination with QUINIZOL BLUE BP CONC. DUSTLESS.

Your Heller & Merz representative will gladly supply full information about DIRECT CHINOLINE and acquaint you with our wide range of colors for papers.

CALCO CHEMICAL DIVISION
Heller & Merz Department

AMERICAN CYANAMID COMPANY
Bound Brook, New Jersey

New York • Chicago • Boston • Philadelphia • Charlotte • Providence

Wool Tares, heavy	4.00	"	4.25
New Burlap Cuttings	6.00	"	6.50

Old Papers

(F. o. b. Phila.)
Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	@	$115.00
No. 1 Hard White Shavings, unruled	100.00	"	—
Soft White Shavings, one cut	90.00	"	95.00
White Blank News	60.00	"	65.00
Soft White Shavings	80.00	"	—
No. 1 White Ledger	75.00	"	80.00
Ledger, colored	60.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	45.00
Overissue Magazines	nominal		
New Manila Envelope Cuttings	80.00	"	—
No. 1 Assorted Old Kraft	60.00	"	65.00
No. 1 Mixed Paper	20.00	"	—
Box Board Cuttings	20.00	"	—
Kraft Corrugated Cuttings	nominal		
Old Corrugated	30.00	"	35.00
Overissue News	40.00	"	—
No. 1 News	—	"	30.00

BOSTON

Old Papers

(F. o. b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled	7.00	@	8.00
No. 1 Hard White Shavings, ruled	7.00	"	8.00
Soft White Shavings, Misc.	6.25	"	6.50
No. 1 Fly Leaf Shavings	1.65	"	1.80
No. 2 Fly Leaf Shavings	2.00	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	1.25	"	1.50
Mixed Colored Shavings	2.50	"	2.75
New Manila Envelope Cuts, one cut	5.00	"	5.50
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	3.50	"	3.75
Mixed Kraft Env. & Bag Cuttings	3.75	"	4.00
Kraft Envelope Cuttings	3.75	"	4.00
No. 1 Heavy Books & Magazines	2.50	"	2.60
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	4.25	"	4.50
Groundwood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	3.50	"	—
No. 1 Mixed Paper	—	"	.95
Overissue News	1.50	"	1.75
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.50	"	—
Jute Corrugated Cuttings	1.07½	"	—
Paper Strings	2.25	"	2.50

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	—	@	4.75
Domestic	—	"	4.75
Sisal Rope No. 1	6.00	"	—
Sisal Rope No. 2	5.50	"	—
Mixed Rope	5.25	"	—
Mixed Strings	2.00	"	2.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.50
Manila Rope—			
Foreign	(nominal)		
Domestic	6.25	"	—
Soft Jute Rope	5.00	"	5.25
Jute Carpet Threads	6.00	"	—
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	—	"	4.75
Domestic	—	"	4.87½
South America	5.25	"	—
Wool Tares—			
Foreign	4.75	"	—
Domestic	4.75	"	—
Aust. Wool Pouches	5.00	"	5.25
New Zealand Wool Pouches	5.25	"	5.50
New Burlap Cuttings	6.00	"	6.50
Heavy Baling Bagging	5.25	"	5.75
Paper Mill Bagging	3.50	"	3.75
No. 1 Roofing Bagging	1.75	"	—

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.08	@	—
Fancy Percales	.07½	"	.08
New White No. 1	.11	"	.11½
New Light Flannelettes	.08	"	.08½
Canton Flannels, Bleached	.10	"	.11
Underwear Cutters, Bleached	.10	"	.11
Underwear Cutters, Unbleached	.11	"	.12
Silesias No. 1	.08	"	.08½
New Black Silesias	.05	"	—
Red Cotton Cuttings	.05	"	—
Blue Overalls	.08½	"	.09
Soft Unbleached	.11	"	.12
Blue Cheviots	.08½	"	.09
Fancy	.06	"	—
Washable	.06	"	—
Khaki Cuttings	.06½	"	.07¼
Corduroy	.03½	"	—
Khaki Canvas	.06¼	"	.06¾
B. V. D. Cuttings	.10½	"	.11¼

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	2.00	"	—
No. 2	1.75	"	2.00
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	6.00	"	—

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
Mill Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	$110.00	@	$120.00
No. 1 Hard White Shavings, unruled	105.00	"	115.00
No. 1 Soft White Shavings	80.00	"	95.00
No. 1 White Ledger	55.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	43.00
White Blank News	43.00	"	49.00
Mixed Kraft Env. & Bag Cuttings	75.00	"	85.00
No. 1 Assorted Old Kraft	45.00	"	55.00
Overissue News	28.00	"	—
No. 1 News	18.00	"	—
No. 1 Mixed Paper	12.00	"	—
Old Corrugated	30.00	"	—
Mill Wrappers	22.00	"	

MARKETS

BLANC FIXE—Demand steady, supplies adequate, deliveries fair. Pulp is currently quoted at $55 per ton, in barrels, car lots, at works; and $60 less car lot same basis.

BLEACHING POWDER—Supply tight although demand has eased up. Shipments improved. Quotations are unchanged. Prices on bleaching powder range from $3.00 to $3.75 per 100 pounds.

CASEIN—Current prices on processed acid precipitated casein are quoted around 24 to 26 cents per pound for domestic grades and 28 to 32 cents for imported grades f.o.b. shipping point.

CAUSTIC SODA — Market remains tight with some improvement noted in shipments. Solid caustic soda is reported at $2.85 per 100 pounds; flaked and ground offered at $2.25 to $3.25; per 100 pounds, car lots, at works.

CHINA CLAY—Demand steady, domestic grades in good supply. Domestic filler clay is currently $9 to $11 per ton, car lots. Coating clay is currently $15 to $30 car lots. Imported clay is currently quoted at from $18 to $35 per ton, in car lots, export warehouse.

CHLORINE—Demand remains strong in a tight market. Lack of tank cars continues to hamper deliveries. Quantities unchanged. Chlorine is currently quoted at $2.25 to $3.75; per 100 pounds.

ROSIN—Gum Rosin in drums per 100 pounds, net, in yard New York, car lots, B, D, E, $8.25; F, G, H, I, $8.50; K, M, N, WG, & WW, $8.55. Wood Rosin, per 100 pounds net, f.o.b., l.c.l. N. Y., B, $6.45; FF, $7.95; G, H, I, K, M, $8.28; N, $8.33; WG & WW, $8.45; X, $8.55.

SALT CAKE—Demand continues strong with slight improvement in shipments. Prices remain unchanged. Domestic salt cake is quoted at $20 to $26 per ton in bulk.

SODA ASH—Demand active with no improvement in the supply situation, previous orders filled. Contract orders prevail at the same high levels. Current prices, car lots, per 100 pounds, are as follows; in bulk, $1.10; in paper bags, $1.30; and in barrels, $1.70.

STARCH—Capacity production absorbed by active demand, export demand eased up. Starch prices continue strong with the pearl grade quoted at $6.37 per 100 pounds; powdered starch at $6.48 per 100 pounds, car lots, Chicago.

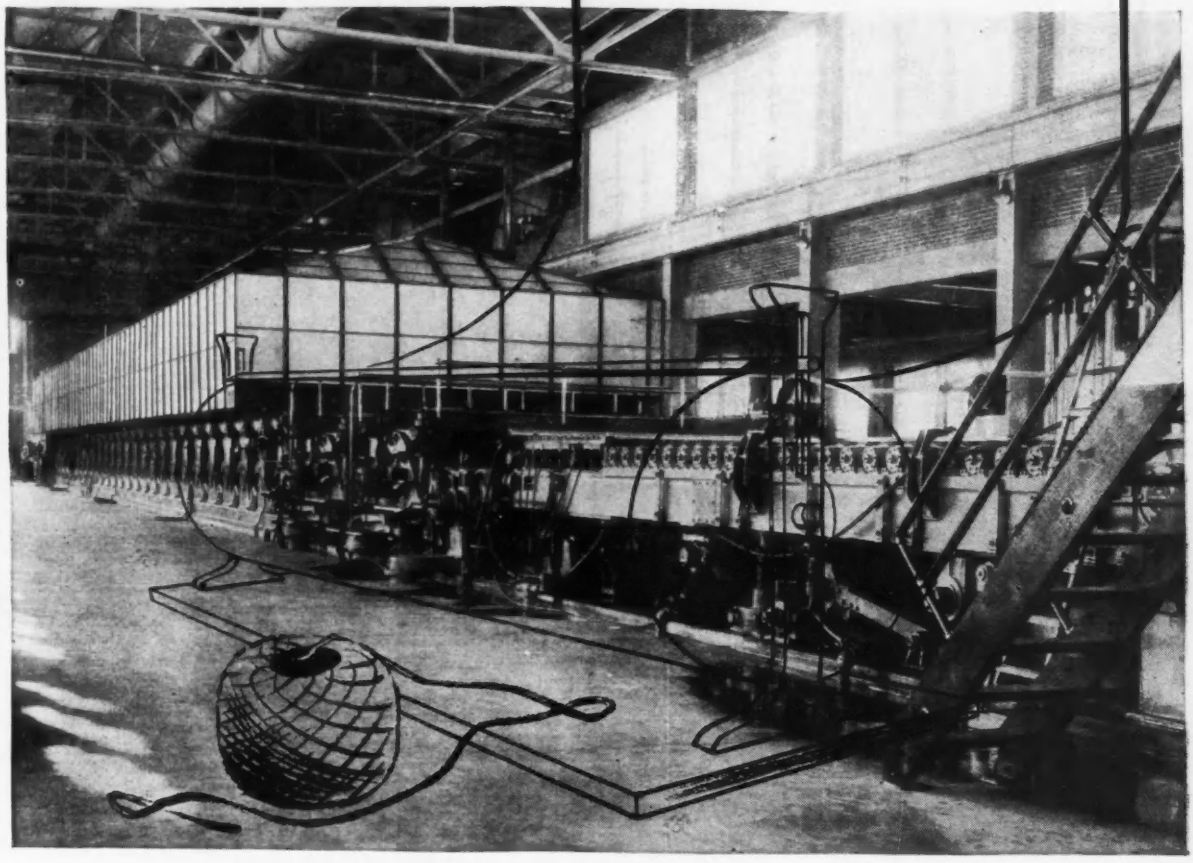
SULPHATE of ALUMINA — Active demand covered by fair supplies. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.30 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is quoted at $1.95 to $2.25 per 100 pounds in bags at works.

SULPHUR — Supplies ample to meet increasing demand. Annual contracts are quoted at $18 per ton long ton, f.o.b. mines; the price f.o.b. at Gulf Ports is $19.50 per long ton.

TALC—Domestic and French markets have eased up, prices remains steady. Domestic grades are currently quoted at from $16 to $30 per ton at mines; Canadian at $35 to $45 per ton. All prices in car lots.

This Machine Makes . . .

KRAFT



210" Fourdrinier Machine
MAKING KRAFT PAPER

Bagley & Sewall Machines making every kind of paper from tissue to board are running in mills in every corner of the globe. Some of the largest and fastest paper machines in use today bear the Bagley and Sewall trademark.

Write us. Our engineers will be glad to give you the benefit of our 77 years' experience in the paper making industry.

BAGLEY & SEWALL

DESIGNERS AND BUILDERS OF PAPER MAKING MACHINERY
WATERTOWN, NEW YORK

Noble & Wood Advances Hayes and Eckweiler

HOOSICK FALLS, N. Y. — Harry N. Weir, president of The Noble & Wood Machine Company, makers of jordans, beaters, pulpers, and other paper mill equipment, has named Frank Hayes as sales manager and George Eckweiler as assistant sales manager of the company.

Mr. Hayes has been associated with the company since 1921. He has a thorough knowledge of Noble & Wood products and their application in the paper industry. During the last 26 years he has been employed in the shop, cost accounting, engineering, and sales departments.

Mr. Eckweiler, the newly appointed assistant sales manager, has been in charge of advertising and export sales for this company for the last ten years.

Trends

(Continued from page 22)

Demand for waste paper continues strong for all quality collections. Prices for all grades are firm with top grades offered and taken up at peak levels. No. 1 white ledgers is strong at $75 to $85 per ton baled f.o.b. New York. No. 1 mixed paper is taken up at $17. White blank news goes to paper mills at $80; old corrugated $30 to $32. No. 1 hard white envelope cuts, one cut are still close to $135.

PAPER EXPORT

IS A FULL TIME JOB!*

AND OUR ORGANIZATION IS GEARED TO DO THE JOB

For over 40 years the name *de Vries* has been associated with paper among buyers in all world markets.

For over 40 years the name *de Vries* has been synonymous with the export sales of leading paper mills.

E. de Vries Company

PAPER EXPORTERS ALL OVER THE WORLD

EDVECO

220 EAST 42nd STREET
NEW YORK 17, N. Y.

EDVECO

Cable address "Cellulose" New York

*Trade Mark
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Hoosier Trade Still Rations Its Supply

INDIANAPOLIS—Paper demand in all lines continued heavy in this area last week with supplies in some instances strictly limited and rationed. In spite of the fact that tissues, paper towels and napkins were reaching this area in larger amounts, the demand has been enormous. This area has sweltered through three weeks in which temperatures were above 90 degrees every day, one of the longest heat spells on record and naturally th demand for napkins, towels, paper plates and cups reached perhaps an all-time high. Nor does the end seem in sight as this is written. Then, too, the Labor Day Holiday is coming up and there is expected to be no diminution in demand for summer specialties until after that holiday and the coming of cooler weather.

Demand for building paper and roofing also continued heavy with much more construction going on this year than last in spite of higher building costs. For the most part the jobbers here have been able to meet the demand, though in some instances there have been cases when different grades of roofing had to be subsituted.

Newsprint continued on an allotment basis. The publishers are moaning about costs and the local papers have increased their weekly subscription rates, allegedly to offset these mounting print paper costs. Advertising rates also have been upped, but there has been no lack of demand for space and quite a lot of this demand is being turned down.

The box factories say that demand has held very heavy in spite of some lessening in some lines. Other manufacturers are more than making up the loss that occurred when business fell off in other lines. The demand from the dairy and brewery trade has increased and promises to be heavy until much cooler weather.

Kraft papers and bags were scarce last week with demand heavy. The bag demand from cleaners and laundries was extremely heavy, with other lines continuing steady.

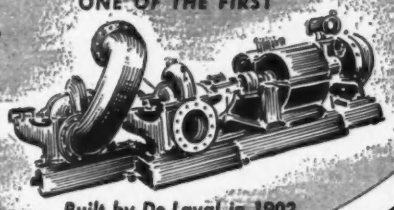
NEPCO Families Enjoy Annual Day at Play

PORT EDWARDS, Wis.—Between 3,600 and 4,000 employes of the Port Edwards and Nekoosa mills of the Nekoosa-Edwards Paper Company and their relatives and friends attended the anunal picnic sponsored by the company at Lake Wazeecha on August 24. This was the largest picnic ever held for the employes. It was in celebration of the company's sixtieth year.

Speed boat races, stage shows and various specialties were on the program. The picnic was interrupted by heavy rains on two occasions, but these did not disperse the crowd beyond their duration.

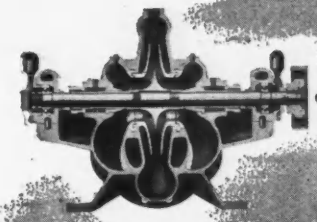
45 Years of PUMP IMPROVEMENT

ONE OF THE FIRST

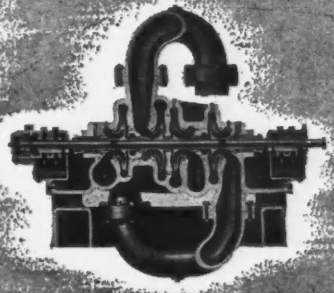


Built by De Laval in 1902

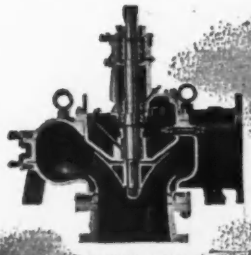
Modern De Laval centrifugal pumps represent the culmination of more than 45 years of continual improvement and perfection. This long period of concentration upon the problems of centrifugal pump design and application places at the user's command a complete line of modern, high quality pumps and a vast store of knowledge concerning pump application problems.



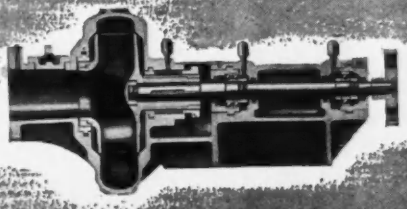
SINGLE STAGE, DOUBLE SUCTION PUMP



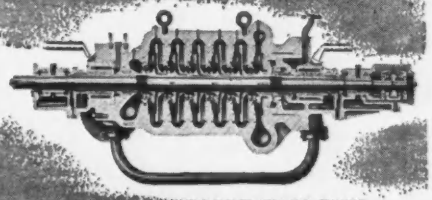
FOUR STAGE, OPPOSED IMPELLER PUMP



MIXED FLOW PUMP



CLOGLESS PUMP



HIGH PRESSURE, MULTI-STAGE PUMP

GP-1

TURBINES • HELICAL GEARS • WORM GEAR SPEED REDUCERS • CENTRIFUGAL PUMPS • CENTRIFUGAL BLOWERS AND COMPRESSORS • IMO OIL PUMPS

DE LAVAL

STEAM TURBINE COMPANY
TRENTON 2, NEW JERSEY

SALES OFFICES: ATLANTA • BOSTON • CHARLOTTE • CHICAGO • CLEVELAND • DENVER • DETROIT • DULUTH • EDMONTON • GREAT FALLS • HAVANA • HELENA • HOUSTON • KANSAS CITY • LOS ANGELES • MONTREAL
NEW ORLEANS • NEW YORK • PHILADELPHIA • PITTSBURGH • ROCHESTER • ST. PAUL • SALT LAKE CITY • SAN FRANCISCO • SEATTLE • TORONTO • TULSA • VANCOUVER • WASHINGTON, D. C. • WINNIPEG

Hammermill Agents Assemble at Erie

(Continued from page 10)

mermill's advertising counselors, spoke at the August 22 meeting. His talk, while humorous and informal, included a serious discussion of the foreign affairs policy of the United States. "It is," Mr. Barton stated, "very wholesome that the American people are now beginning to think about foreign policy and to discuss it. The only hope of the world is to keep our economic system strong and to believe in it."

Other speakers at the August 22 meeting were: N. W. Wilson, D. S. Leslie, H. R. Baldwin and A. E. Frampton. Mr. Baldwin discussed the present production of various Hammermill lines while Mr. Frampton spoke about the function of Hammermill advertising and its relation to the sale of Hammermill papers.

Prior to the general business sessions held at the Kahkwa Club in Erie, the Agents' Advisory Committee met with mill officials at Weigelia Lodge, Mr. Wilson's country home, for a discussion of the Conference program. Committee members present were: Ralph G. Luff, D. L. Ward Company; Philadelphia, Pa., acting chairman; George F. Gray, Henry Lindenmeyer & Sons, New York, N. Y.; D. A. Hoadley, Carpenter Paper Company, Omaha, Neb.; Eric A. Rohrer, Swigart Paper Company, Chicago, Ill.; Frank H. Winter, Carter Rice & Co. Corp., Boston, Mass.; L. V. Mulnix, Carpenter Paper Company, Grand Rapids, Mich.; Victor E. Hecht, Zellerbach Paper Company, San Francisco, Calif.

The assembled agents elected these men to serve three year terms on the Advisory Committee: Hugh G. Boyer, Caskie Paper Co., Inc., Charlotte, N. C.; C. W. Stuyvesant, The Alling & Corp Company, New York, N. Y.; C. S. Lafferty, Beacon Paper Company, St. Louis, Mo. Mr. Ralph G. Luff, D. L. Ward Company, Philadelphia, Pa. was elected chairman for the next year.

Elected for three year terms on the Paper Committee were: F. W. Canaday, E. D. Palmer & Co., Ltd., New Orleans, La.; G. Forrest Gillett, Chicago Paper Company, Chicago, Ill.; A. F. Miller, The Central Ohio Paper Company, Columbus, Ohio.

The final afternoon of the Conference was devoted to golf and other games. In this competition, Mr. Frank W. Howe, Hubbs & Howe Company, Buffalo, N. Y., won a leg on the Ernst R. Behrend Golf Trophy by finishing "low gross" in the No. 1 Division of the links competition.

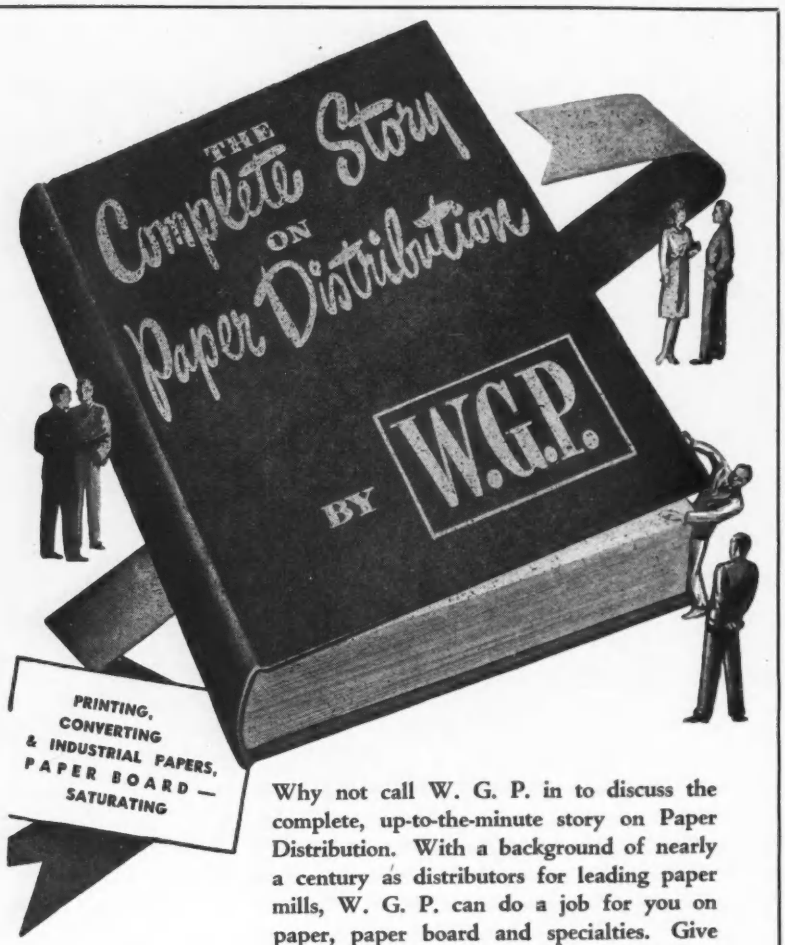
Other prize winners were: Golf: No. 1 Division, low net, A. W. Green; second low net, B. C. Swanson. No. 2 Division, low gross, E. E. Cole; low net, John H. Schneider; second low net, W. J. McAfee. Kickers' Handicap, Geo. Seidensticker, Jr., Pitch-'N-Putt, low gross, Fred B. Korbel; second low gross, D. K. Conover.

Monte Carlo: First prize, George F. Gray; second prize, Kenneth Andrews. Skiddoo: First prize, J. S. Fairchild; second prize, John B. Binley. Dart Bowl: First prize, Ralph G. Luff; second price, Richard H. Van Laer.

Food and Container Associates Organize as Clearing House

CHICAGO — Formation of the Associates of the Food and Container Institute has just been completed and the new group is attracting much interest among certain elements of the paper trade. The group, a non-profit organization, will function as a clearing house for the dissemination of fundamental scientific information pertaining to food and containers and will assist in coordinating research.

Membership will include the Food and Container Institute, the food research organization for the military branches, and the container and research experts of several widely known industrial organizations. Information concerning the new organization may be secured from Colonel Charles S. Lawrence, Quartermasters Corps, United States Army, 1849 W. Pershing Road, Chicago 19, Illinois. He is reported to be working closely with Dr. A. Frieden, research expert with the Pabst Brewing Corporation, Milwaukee headquarters.



Why not call W. G. P. in to discuss the complete, up-to-the-minute story on Paper Distribution. With a background of nearly a century as distributors for leading paper mills, W. G. P. can do a job for you on paper, paper board and specialties. Give your products the benefit of W. G. P.'s low-cost distribution both domestic and export.

EASTERN REPRESENTATIVES FOR E. J. CADY PAPER
SCALES AND MICROMETERS
AGENTS FOR AMES POCKET MEASURES

WALKER · GOULARD · PLEHN · CO.

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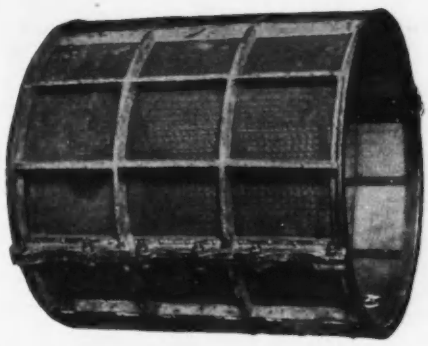
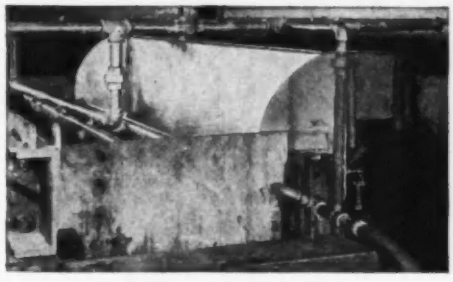
DOMESTIC AND EXPORT

MEMBER PAPER ASSOCIATION OF NEW YORK CITY

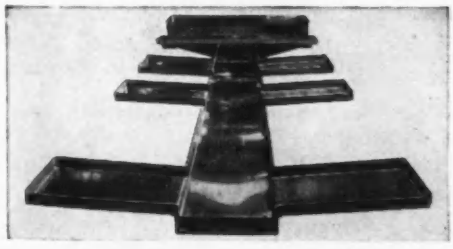


PERFORATED MONEL PLATE improves efficiency of centrifugal pulp screens. Monel holds the size and shape of its perforations, outlasts other screen plate materials as much as 2 to 3 times.

DOCTOR BLADES of extra-strong, extra-hard "K" Monel are especially suited for creping heavy paper and specialties, for use against dryer and flaker rolls, or hard rubber covered rolls.



ONE-PIECE, SELF-SUPPORTING Monel headboxes for Fourdrinier wet ends. They stay tight, resist corrosion by paper stocks and white waters, are easy to keep slick and clean.



IMPROVE FIBRE RECOVERY and make clean-up a speedy, easy job. Monel save-all trays need no laborious brushing or acid cleaning. They are strong and rigid, assure long life and reduced maintenance expense.

How easily can *You* find ALL THESE PROPERTIES IN *One* METAL?

1. CORROSION RESISTANCE
2. HIGH STRENGTH
3. TOUGHNESS PLUS DUCTILITY
4. SPECIAL MECHANICAL PROPERTIES (e.g. spring characteristics)
5. GOOD FABRICATING QUALITIES

Answer: As easily as you can say "*INCO* Nickel Alloys."

These versatile metals answer the frequent call for hard-to-find combinations of properties in *one* metal.

Take Monel* as an example. It resists corrosion by pulps, paper mill stocks and white waters, caustic liquors and cleaning solutions of dilute muriatic and sulfuric acids.

It stays smooth. It doesn't pit. It's easy to clean. It is safely used with bronze and copper parts.

Like Monel, all INCO Nickel Alloys are stronger and tougher than mild steel. All are highly resistant to wear and abrasion. They are ductile . . . readily worked . . . easily fabricated by methods in common use. And—individually—they have certain *extra* characteristics that fit them for special jobs.

You'll find *that* story in our Technical Bulletin C-3. It tells which of the INCO Nickel Alloys is best suited for chemical pulping, refining of stock, paper machine rolls, caustic and chemical recovery processes, pumping equipment and other uses.

Write us for your free copy of this valuable bulletin . . . now.

THE INTERNATIONAL NICKEL COMPANY, INC.
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NICKEL (INCO TRADE MARK) ALLOYS

MONEL* • "K"* MONEL • "S"* MONEL • "R"* MONEL
"KR"* MONEL • INCONEL* • NICKEL • "L"* NICKEL • "Z"* NICKEL
*Reg. U. S. Pat. Off.

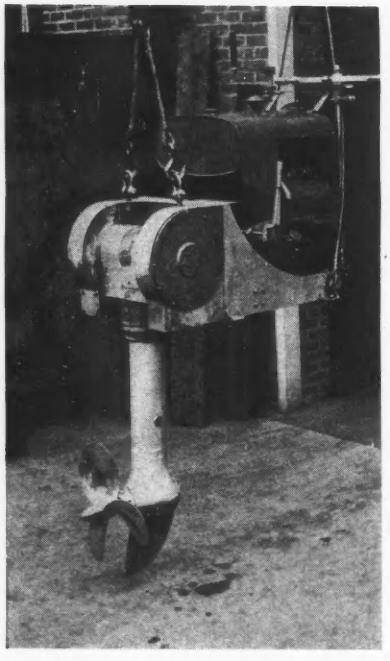
Harbormaster Line Adds New Gas Motor

QUINCY, Mass.—Designing it especially for marine pulp and paper operations, the Murray & Tregurtha people announce the production of their latest "Harbormaster," a gas 20 H.P. Model 0-8.

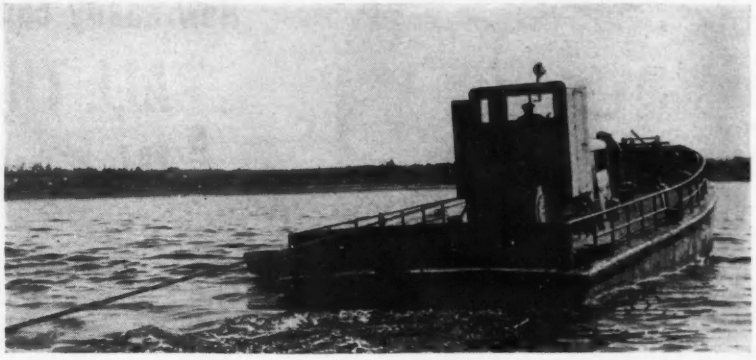
In direct response to many requests by pulp and paper operators this compact heavy duty 20 H.P. Model embodies all the exclusive features of larger "Harbormaster" Models which have achieved new peaks of operating efficiencies and maintenance economies, in widely diversified marine fields. It is the first time as far as records show the marine engine world has recognized and bent its efforts toward solving many of the marine operations in the pulp industry.

Immediately applicable to all types of small work boats including barges, personnel craft and boom boats, one of the novel Model 0-8 designs enable it to be disassembled into two parts and portaged easily from one scene of operations to another. Unlike other heavy duty marine engines which either are wedded for life to the craft in which they are installed, or the transfer cost is way out of reason, the compact Model 0-8 can be quickly transferred from one craft to another simply by removing the four bed bolts.

Air-cooled and weighing approximately a thousand pounds the Model 0-8 is the easiest and simplest heavy duty propelling and steering equipment ever manufactured when it comes to operation and maintenance. Ideal for all lake and river operations, the Unit is a natural for shallow water work.



The new 20-h.p. gas Harbormaster



As Bathhurst Power and Paper Uses a Harbormaster

Equipped with the exclusive "Harbormaster" automatic shear pin, operators can work in log booms, rapids and reef-filled shores without fear of damaging the underwater assembly. As guaranteed protection against such damage, the shear pin will automatically shear the instant the underwater assembly strikes a submerged object of sufficient size as to cause damage, allowing the assembly to ride freely out and up over the objective.

With the Model 0-8, the ultimate in maneuverability is an actuality by means of the 360° Propeller thrust steering control. Eliminating the limited-control rudder "Harbormaster" craft are steered by the thrust of the propeller—instantaneous positive steering with full power—and because the propeller may be turned in any direction desired simply by turning the steering wheel complete responsive control is at the operator's touch every second.

One of the main complaints of woods' managers has been the expensive maintenance records of their lake and river craft. Because of the diversified work it has been impossible to hold to any standardization program in efforts to reduce excessive lots of spare parts. With overall applicability this new "Harbormaster" clearly shows the way to standardization. Furthermore, because of its compactness and portability all service and repair can be accomplished during off seasons in the comparative ease of the machine shop.

With other "Harbormaster" models of 40, 110, and 165 H.P., gas and diesel powered, the new 20 H.P. Model 0-8 answers the challenge of an exceedingly important phase of the industry.

Hubbs & Hastings Names New Executives

ROCHESTER, N. Y.—R. C. Kettles, Jr., president of the Hubbs & Hastings Paper Company, has made the following appointments:

D. W. Leland is named assistant general manager of the Rochester and Syracuse houses; P. E. Cantrell is made sales manager at Rochester, and Leo W. Ryan, assistant manager and purchasing director, at Rochester.

Bullock Finds Importers Drop Suits on Mixed Kraft

NEW YORK — According to Warren B. Bullock, manager of the Import Committee of the American Paper Industry, importers are abandoning their efforts to secure a low duty rate on wrapping papers with a mixture of kraft pulp. The Import Committee has taken the position that the provision for a 20 percent duty on kraft wrapping paper applies only to paper which is 100 percent kraft pulp and that all other wrapping papers are dutiable at 25 percent. The Customs officials sustained this opinion, but the issue was carried to the United States Customs Court by several importers in protest against this ruling. These cases, however, were formally abandoned by the importers before being called for trial.

The Bureau of Customs has ruled that wallboard is chief value of gypsum, but with a liner of paperboard, is dutiable at 35 percent as a manufacture of gypsum.

Imports

(Continued from page 20)

1890 bls. prime soft bleached sulphite pulp.

Pulp Sales Corp., Vasaholm, Kotka, 2470 bls. prime unbleached sulphite pulp.

Gottesman & Co., Inc., Devils Lake Victory, Iggesund, 1750 bls. bleached sulphite; 500 bls. bleached kraft.

NORFOLK IMPORTS

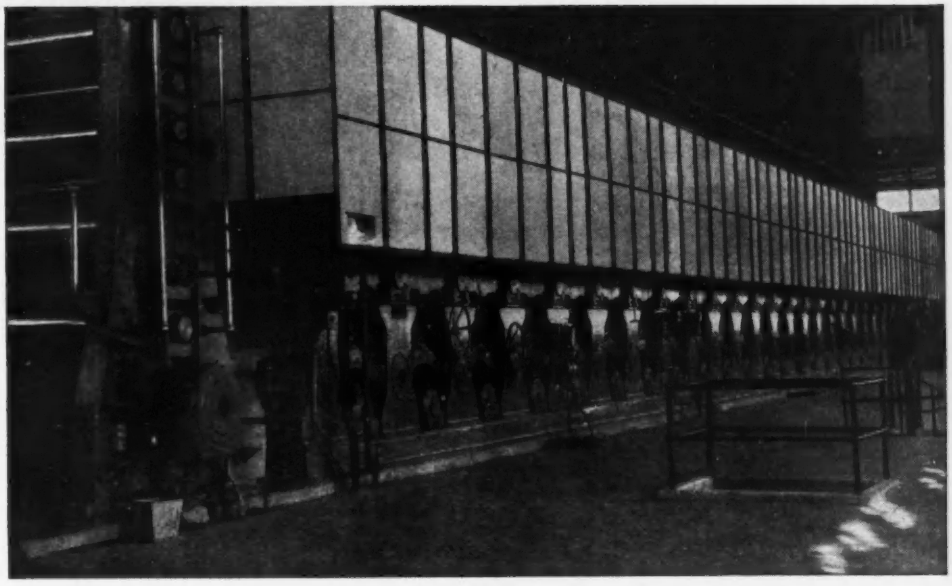
A. De Vries Trading Corp., Norfolk Victory, Antwerp, 63 bls. old scrap bagging.

E. J. Keller Co., Inc., Creighton Victory, Antwerp, 175 bls. old bagging.

Union Bag Votes Extra

NEW YORK—Directors of Union Bag & Paper Corporation last week declared a regular quarterly dividend of 50 cents per share and an extra dividend of 25 cents per share on the capital stock of the company, payable September 12, 1947, to stockholders of record September 5, 1947.

● BUILT BY THE BAGLEY & SEWALL CO.



Production Boosters

at Crossett Paper Mills!

Another place where the dependable performance of SKF's exclusive dryer cylinder mounting shines is in the dryer section of this 210″ Kraft Machine at Crossett Paper Mills, Crossett, Arkansas. *Mounted on three rockers, tending side housings are free to move axially.* The result: Unrestricted expansion and contraction . . . maximum bearing capacity . . . long life . . . *continuous* production. Pioneers of antifriction bearing applications in the Paper Industry, SKF puts the right bearing in the right place. 6309

SKF INDUSTRIES, INC.
Front St. & Erie Ave., Philadelphia 32, Pa.

DIGESTED

Research is an investment—not an expense. And it is an investment which pays dividends to those who have the vision, the patience and the fortitude to back it with their skill and their dollars. That is a lesson which has been learned by all those engaged in lithography and related trades, if our industry is going to meet its present and future opportunities.

Some of our lithographic people believe wholeheartedly in research and others do not. Some think of research as product experimentation and others think of it as a basic long-term study of the entire process. Some believe that research should be confined to the solution of little individual plant troubles and others think it should be entirely general in nature. Some can name scores of projects on which research is needed in our lithographic processes and there are a few, believe it or not, who claim that we have reached perfection and have nothing left on which to research. — By Ernest E. Jones, *Chairman, Research Committee, Lithographic Technical Foundation.*

We must set the stage to meet the demands of the American people. Labor again dedicates itself to this task. Philip Murray, *President, C.I.O.*

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1947		Corresponding Weeks—1946	
July 19	102.8	July 20	102.8
July 26	106.1	July 27	104.7
August 2	103.9	August 3	105.2
August 9	105.1	August 10	103.4
August 16	104.8	August 17	104.5
August 23	*103.7*	August 24	106.1

COMPARATIVE MONTHLY SUMMARIES

1946					
Jan.	94.7	June	104.6	Dec.	97.0
Feb.	98.4	July	94.0	Year Avg.	101.1
Mar.	104.4	Aug.	104.7		
Apr.	102.7	Sept.	101.3	1947	
May	100.7	Oct.	106.4	Jan.	102.1
		Nov.	105.5	Feb.	105.9

Mar.	106.1
Apr.	105.1
May	106.2
June	106.6
July	*93.5*

COMPARATIVE YEARLY SUMMARIES

	1940	1941	1942	1943	1944	1945	1946	1947
Year to Date	86.8	94.5	93.5	88.2	87.9	87.8	99.9	*103.7*
Year Average	85.6	97.4	90.4	87.8	88.1	89.4	101.1	

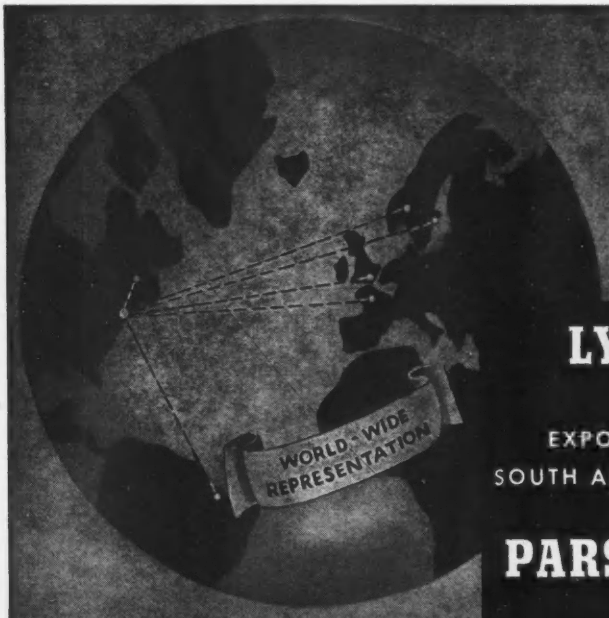
PAPERBOARD OPERATING RATIOS†

Current Weeks—1947		Corresponding Weeks—1946	
July 19	97	July 20	94
July 26	99	July 27	95
August 2	99	August 3	98
August 9	97	August 10	96
August 16	100	August 17	98
August 23	*100*	August 24	100

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1946	90	91	100	99	94	97	89	99	96	100	99	92	96
1947	99	103	101	100	101	101	*90*						

*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.



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LYDDON & COMPANY
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EXPORTERS OF WOOD PULP TO BRITAIN, SOUTH AMERICA AND ALL OTHER WORLD MARKETS

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EDITORIAL

Bid for Cooperation

The engaging frankness of its approach, and the informal completeness of its range of subject matter, the letter of President George A. Mohlman of the Package Machinery Company to employes of the company this week is accorded its appropriate share of news emphasis. It's a lengthy letter, Mr. Mohlman admits; but it is a highly summarized letter too. Its punch line, as theatrical parlance could have it, acknowledges past cooperation and pleads for even more of the same commodity now. Against the need to keep all branches of the business in balance—sales, engineering, finance and manufacturing, the letter recites that Package Machinery employes, as a whole, have the largest take-home pay in the area of the plant.

A sense of security is contributed to the letter in its recital of $8.5 million dollars worth of unfilled orders a seventeen-months schedule at the present shipment rate of half a million dollars worth a month. The requirement of a high inventory that rises from a big volume of business is clearly drawn in the letter—the inventory is nearly six times its normal 1939 level, President Mohlman shows, and he ties this right into the working force by the logic of his statement that this inventory is simply so much dead money until the goods have been processed and shipped. Then the money that was borrowed to pay for this inventory has to be returned to the banks and nothing can become available for profits until the customers have paid for the shipments.

It is to be hoped that President Mohlman's letter was accepted by its recipients in the friendly spirit that its candor and its simple phrasing so plainly invite.

Future of Research

Since its interests in technological progress are so intimately pressing, its own expenditures in research so substantial, and since its continuing future expansion is wrapped up so closely in agricultural and silvicultural economics and with chemistry, the pulp and paper industry finds more than passing interest for its thoughtful moments in John R. Steelman's report, as chairman of the President's Scientific Research Board. Mr. Steelman envisions an increasingly heavy need for scientific research. He finds that with industry bearing seventy per cent of the annual burden in 1930, and the Government paying 14 per cent of the budget in that year, the nation's research bill had grown from 166 million to 345 million in 1940. The war years saw an average annual expenditure of some 600 million dollars. By 1950, the report forecasts, the normal annual bill may be 700 million. Of this the Government shall spend 20 per cent. Private industry is expected to contribute 72 per cent. Other sources, universities, private foundations and the like are to spend the remainder.

Open Season

One open season always present for the paper mill as for other industry is that of the investigation and the law suit because of the damage that is alleged to be inflicted on surrounding country-side and living conditions by manufacturing processes. Each week brings its budget of such complaints and such actions threatened as part of the grist of the news; each week too brings reports of money spent in important amounts for the sole purpose of devising ways to use waste materials profitably and harmlessly to the neighborhood.

A fair sample of the morning's mail brings to the desk tales of a hearing in Wisconsin, of an investigation under way in New Hampshire, of a suit joined in Louisiana. The latter case presents an example of a too-familiar litigation. In it the International Paper Company was called upon to answer claims from some thirty aggrieved property owners because discharges from its Springhill pulp and paper mill are said to have caused damage in the amount of $1,058,022.50 to property and cattle of the area surrounding Bodcau Bayou.

In its answers, filed in Federal District Court, the International Paper Company has denied the charges of damages to land value and cattle as claimed in the suits filed by property owners in southern Bossier parish late last year. The plaintiffs said the plant's discharges were polluting Bodcau bayou and its tributaries.

The paper company claims in its answers, according to the Shreveport Times, that the waste discharged into the bayou is held in impounding basins 11 months of the year and is operated so as to provide a minimum "amount of waste discharge." Waste disposal, it says, is handled in "such a manner as to avoid any possible ill effects from such waste water disposal."

It is also pointed out in the answers that veterinarians have been employed for the past two years autopsying and checking animals that died in the vicinity of the bayou and their results showed that none of them died because of the water, but because of disease, parasites, or similar causes.

The Shreveport Times pointed out that many of the answers claim that the litigants actually bought their land after the International Paper Company had set up its Springhill plant and they were aware of its discharges into the Bodcau bayou at the time of purchase.

To the claim that the value of the land was reduced by the waste matter in the bayou, the company says in the answers that many of the property owners actually sold the land for prices much above those paid for the land.

W. L. Cook

EDITOR

A DYNAMIC ONE-OUNCE ANSWER TO PAPER MILL SLIME
A one-ounce packet of PYRIDOSE—thrown unopened into your beaters or refiners—is deadly to common slime-forming organisms.
PYRIDOSE is dynamic and economical in controlling paper mill slime. It gets to work immediately – since its active ingredient is 140 times more soluble than other comparable agents.
When you use the handy one-ounce packet of PYRIDOSE there is no need to stop machines . . . no waste of materials.
For further details write to your nearest MALLINCKRODT office.
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CHEMICAL WORKS
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SECTION OF THE

TECHNICAL ASSOCIATION
OF THE PULP AND PAPER INDUSTRY

122 E. 42nd ST., NEW YORK 17, N. Y. Edited By R. G. MACDONALD, Secretary

Color Engineering*

By Frederic H. Rahr[1]

Abstract

This paper deals with the commercial significance of color engineering . . . outlining the scope of activity and some representative problems, their analysis and method of approach to their solution. Interpretation of the results in terms of specific accomplishments, together with a review of the growing importance of color and its application.

There seems to be much confusion about the term "color engineering" which needs to be cleared up. It is the author's hope that this paper may help to penetrate the fog which has surrounded the "color engineering" term for over a decade.

It is not unusual for a new form of occupation to be tagged with a name which is ambiguous, but it is certainly undesirable for that confusion to continue to exist. The objectives of "color engineering" need explaining—then, after several examples of typical jobs are considered, perhaps among you a more appropriate term may be found to describe both this activity and the people in it. The pure color scientist, in his pursuit of knowledge through research has as his objective the finding and control of color facts in the physical, chemical, psychological or other fields. The manufacturing or distributing industrialist has as his objective the improved production, reduced costs, and wider distribution of his colored goods. The artist wants to create his own ideas of beauty—in color. The consumer has as his objective the acquisition of more and better color in goods, with which to provide increased personal satisfaction of a real want.

All four of these groups have a very real interest in color, but their points of view, and their activities regarding color are highly diversified. The scientists want to understand, define, specify and control color. The manufacturers to make it a part of their goods where it is useful in manufacturing efficiency or sales appeal. The artist wants to use it in his creations. The consumer usually does not understand color, he just likes it or not, as the case may be, and pays his money or puts it back in his pocket.

It has always seemed to the author that there was a great need for an interlocutor in this field, a practicing consultant, who might assist the scientists, the industrialists, the artists, and the consumers more rapidly to put to practical use the most efficient, and most satisfying colors for each of their many and diversified needs. His earliest convictions along these lines started in 1925, when they were little more than an academic theory, but by 1929 he was practicing them and, since then, his convictions that this is a very real need have increased each year.

The extravagance of economic waste through inefficient use of color in business is appalling. The continued failure of business to use the most advanced color science is inexcusable, and the consistency with which consumer color wants have been all but ignored both by the artist and the business man is almost unbelievable. But it appears, that after years of missionary work, the idea that perhaps the subject of color is not as simple as most people believe, nor as ephemeral and personal as others would have us believe, is at last beginning to register.

The day when the scientist can be satisfied to record color facts, the business man to give them little more than lip service, the artist to use them according to his own taste, the market analyst to measure markets, and the consumer to remain the forgotten man is probably rapidly passing.

If the country remains on a "free-enterprise" capitalistic system of competitive business, and there are as yet some indications that it may, we can expect to see an increased interest on the part of competing business concerns in the problems of color in their race for profits. As the postwar markets have been approached, O. P. A. has threatened to become "Our Public's Attitude," which for those who compete in sales is very important. Once again the "buyer's market" appears to be approaching.

Few specific examples of what can be accomplished for business by bringing closer together the groups mentioned above, and by a more efficient application of their talents to the problems of industry should be provided.

In doing so, it should be pointed out that in our economy it is business that pays the bills and business that must reduce waste to improve its own position. Regardless of whether one's salary comes from government, an educational institution, or directly from the public, it is in consumer dollars that taxes, endowments, and salaries are paid and the consumer is therefore, the one who can do the most for or against his color work.

Consider some typical applications of engineered results in the use of color in business.

About 1930, just after the then depression got into full swing and the buyer's market took control, a manufacturer of asphalt shingles used the color engineering approach instead of the "inspirational stylist" approach.

He restyled the colors of his most expensive

* Paper delivered at the joint session of the Inter-Society Color Council and the Technical Association of the Pulp and Paper Industry, Hotel Commodore, New York, N. Y., Feb. 25, 1947.

[1] Frederic H. Rahr, Inc., Color Clinic, New York, N. Y.

shingles on the basis of a market study of consumer color wants. The results were startling. Sales on this item zoomed from an average of $40,000 per year to over $600,000 in fourteen months — this was on a top price line in the bottom of the depression, when any goods were hard to sell.

In the same industry, subsequently another manufacturer engineered a color change in his entire shingle line. Sales for this company grew 98% in two years, while the average for the industry as a whole was an increase of 20%. Colors, keyed to consumer markets, when recommended to this manufacturer by the color engineer, had seemed very radical in their differences from the usual shingle line. Sales showed that engineered colors were more wanted by the public than any which had been previously used by the entire industry. Many other companies tried out "inspirational color" lines. Competitively they were not successful. Today's sales show that the colors initiated through color engineering have spread through the entire competitive field, and that what then seemed radical to the manufacturer was the direct reflection of a measured public appetite.

In the floor covering industry there is another series of examples for comparison. One line of floor coverings, with "engineered" styling, based on consumer market surveys, found that a series of colors, which were not wanted by jobbers or dealers, or the manufacturer himself, outsold all other colors in his line six months after their introduction.

More recently, a small manufacturer of paint has introduced the results of a color engineering job which, with two years out for war, has taken a period of eight years to complete. This manufacturer long ago realized that there was tremendous consumer appetite for color in paint which was not being well satisfied by any of the usual "trade sales" lines or by the local painters' mixtures of colors in whites. He also realized that in the interest of manufacturing and distributing economy, he had to beware of complicated color lines.

Manufacturing complexities and obsolescence of retail stocks were nightmares of expense and trouble, which produced more waste than their sales advantages were worth. Passing style trends, local and national color promotion, and that will-o-the-wisp consumer color preference, made any multicolor paint line subject to frequent changes to keep up with the times.

Color engineering brought to this manufacturer a complete solution.

1. His line for manufacture and distribution of decorating paint material is now made up of six strong clear colorants together with a neutral gray, all of which are permanent organic materials engineered for this specific problem, and three whites— a flat, semigloss, and full gloss white.

2. The procedure for handling these in 1,000 intermixes has been reduced to a simple machine operation in the retailer's place of business.

3. The retailer with a minimum inventory of seven colors and white will provide any one of a thousand matching or harmonizing samples for any consumer expressed color preference.

4. Retailers and consumers are falling over themselves to obtain these materials and the manufacturer has acquired a position of recognized leadership in the paint industry — since last March when this line was first publicly announced.

5. There is no obsolescence, manufacturing is simplified, consumer satisfaction is vastly increased, and required inventories are minimized, with a ten or twelve times "turn over" each year.

Consider another field. This one is related to many of these consumer color appetites, and to a vast number of manufacturing and retailing organizations through color.

In this case, a leading publication in the home furnishings field was desirous of assuring its competitive position. It had artists, stylists, special feature writers, and editors whose job it was to develop new and better material for public consumption, to gain and hold a position of real influence in the market, and thereby to attract to themselves both readership and advertising. They, of course, realized that color was a subject of great importance both to their readers in the trade and among consumers.

They turned to a consultant for a study of their problem. As a color engineer or consultant, his advice was to go to the people who would ultimately be both readers and buyers of any goods manufactured by their advertisers and find out what their unsatisfied color appetites were. To this was added a recommendation concerning the coordination of the color viewpoint of management, editorial, and otherwise.

For them a coast to coast study was made among women, shoppers in furniture and department stores, and a carefully indexed color record made of both the colors they *owned* and the colors they *wanted* next in their homes. This record was broken down statistically and reported.

Instead of having to seek out advertisers, it was found that chief executives of the leading manufacturing and retail store group, usually unapproachable, came to the offices of the publication for a private interview and a reporting of the entire findings. But this was not all. They sent in their stylists to coordinate their lines with the findings — and their merchandising and advertising managers to learn how to talk about it.

It should be pointed out that market measurement is seldom enough, nor is it by any means the only function of the color engineer.

Beyond that, but preferably always with a good background of consumer preference knowledge, it is also his job to see that each of the departments involved in the problem is coordinated and that each delivers its own portion of the color solution.

Color Program

As an example of what is meant, some of the steps which should be covered in any well engineered color program for a producer of consumer goods are cited.

1. The objective of the program must be clearly defined.

2. The establishment of policy and a program for obtaining the objectives of a color program for the client must be outlined.

3. A study of the current unsatisfied color wants in typical markets.

4. A comparison of the *wants* versus ownership as indicated by both survey and past sales records.

5. An interpretation of competitive lines and the client's line to determine which colors are most needed by the client to reach the "want" market first.

6. A study of colorants available for the production of "want" colors.

7. A comparative study of their permanence and costs versus materials in use.

8. Where required, a research program to develop colorants needed for "want" colors.

9. The production of small amounts of the "wanted" colors, as indicated by an interpretation of the above studies.

10. The production and market testing of the finished product in "wanted" colors, in typical markets.

11. A study and interpretation of these tests in terms of the end product.

12. Correction, if required by the results of market tests.

13. Retests in markets on corrected merchandise.

14. The preparation of a merchandising, publicity, and sales program to let the public know that the client has the colors they have "wanted".

15. The establishment of specifications and manufacturing controls to assure the accurate reproduction of the "wanted" colors in the merchandise, in advertising and in packaging.

16. A series of recommendations to guide the retailer in the arangement of displays, lighting and general presentation of the merchandise for sale to the public.

17. An educational program among both the manufacturer's personnel and the distributor's for the more efficient uses of "wanted" colors in sales building.

18. A periodic check by the color engineer to assure the efficient continuation of each of the above controls.

19. The establishment of a pattern for the evaluation of results achieved.

20. A further study of markets, after an appropriate period of time, which depends upon the type of commodity involved, to determine when further color changes might increase sales and profits.

As these steps are tabulated, they seem somewhat long and involved. However, most of them are now present in some form in every business. The difficulty arises from setting them up as a specific program, which has brought out into the open direct costs and, at the same time, requires an objective consideration of a problem more often handled in a somewhat subjective way.

It is not unusual to find that administrative executives have great difficulty in justifying a budget which draws out into the open the costs for such a program. These costs are almost entirely hidden in their usual methods of operation. However, a fair appraisal of the organized approach, as opposed to the more or less casual one of usual business practices, discloses that leadership has been achieved only by extreme good fortune or by attacking the problem in a deliberate not casual way, and that by this approach every unnecessary bit of waste motion and waste expense has been carefully engineered out of the real costs.

In talking of studies which should be made by industrial users of color, it would be well to mention studies which have been made of industrial color users and *their* wants.

Essentially, what they seem most to want is a standard overall solution to color problems, which can be understood and applied by any amateur. This standard solution must be so general that it will answer all the problems of color use in manufacturing operations, or in styling merchandise, and it must be so effective that when applied it will provide a permanent panacea to their business. If such an answer can be delivered it is, "hire expert professional help!"

There is no other standard solution. Each color problem requires and deserves its own study and its own specific answers. The type of help to hire depends upon the type of problem at hand. One of the fundamental services the "color engineer" must render is to see that his client gets the best of the kind of specialized help he needs. This will frequently mean that outside specialists must be called in, for very few manufacturers can justify the expense of the full time of such specialists and very few "color engineering" firms contain within themselves sufficiently broad specialized knowledge.

As pointed out above, the plotting of the entire course must come through a definition of the problems, the establishment of objectives to be accomplished, and the development of a yardstick by which to measure and evaluate tangible and intangible results achieved.

Some specific and widely diversified case histories were mentioned before the listing of steps which should be covered in developing color solutions to industrial and sales problems.

A few more examples are mentioned to indicate the scope of the fields in which "color engineering" has and can function profitably. Defense housing is a good example, where in twelve months one agency built 156 projects, 30,000 houses scattered from Puerto Rico to Hawaii. Contrary to the results achieved by others, this agency had public praise for the appeal of its projects, but all remember the violence with which all of this work by others was criticised. The essential appearance factor difference was that in these 30,000 units interior and exterior color was engineered to appeal to the occupants.

The identification of piping systems is another field of great importance to industry. Here codes have been evolved as complicated as 214 different color variations,—but not by the color engineer. Their answer to the problem reduced itself to a simple spectral identification of degree of hazards which was of sufficient value to be adopted by the American Standards Association.

Skip from this to the establishment of tolerance standards appropriate to various industries such as ceramics, paper and pulp, metallic Venetian blind slats, plastic molding materials, automotive, cinematographic, or ink fields and in each case you again find that no general solution applies, but that no problems exist for which practical solutions cannot be developed if they are properly studied.

All too often in the past industrial color judgments have been based upon superficial considerations, backward looking, or subjective personal preferences. During the past two decades, stimulated by the war years new techniques have been developed which are directly applicable to the various fields of business activity. As pointed out above, it is not to be expected that any one business concern will attempt to employ the full time of the personnel with which to apply these techniques, but it is to be hoped that in the interest of economy, efficiency, and profit business will utilize their abilities where the problems are of a magnitude to require expert guidance.

In the world of tomorrow where new forms of controlled energy will provide frequent shifts in commercial emphasis, the improvement of techniques for the production and control of useful and pleasing color attributes will become more and more necessary for business survival. In this field, through the development and application of basic criteria, the "color engineer" will serve both industry and science, probably as suggested at the beginning of this paper as an interlocutor. Consequently, it may be anticipated that "know how," more broadly used, will furnish the keynote with which business may satisfy consumer color wants and gain increased profits.

Beater Sizing with the Silicones*

By C. J. Bergendahl[1] and C. E. Libby[2]

Abstract

The synthetic resins have been of interest to the papermaker for some time as a possible substitute for rosin in sizing paper. Among the synthetic resins now available, one group in particular, the silicones, has attracted attention through their many unusual properties, i.e., stability against heat, resistance against chemicals and water.

The first use of the silicones in the paper industry took place during World War II when gas mask filter paper was treated with the vapor from methylchlorosilane. Sizing obtained by this method is excellent but certain disadvantages are connected with the use of the vapor sizing method. Therefore, in this investigation a number of other silicones have been tested regarding their suitability as beater sizing agents.

It was found that one of the silicones, a fast curing resin in a toluene solution, gave very satisfactory sizing both to water and ink. The amount of resin necessary using distilled water in the beating and sheet making procedures was less than 0.1%. It was found also that a mixture of the fast curing resin and an alkaline or acidic emulsion of methylsilicone oil gave good sizing results. Sizing was obtained when the silicone was added to the pulp stock at a pH value below 7.0. The final pH was not of any importance.

The silicones may be used in sizing the most common types of papermaking pulp and the freeness of the pulp does not effect the sizing result.

The type of water used during the refining and papermaking process is of great importance. A hard water will decrease the sizing effect of the silicones.

The small amount of silicone necessary for good sizing makes the silicones especially suited for the sizing of paper where a large amount of size might cause difficulties.

The synthetic resins have been of great interest to the papermaker for a long time as a substitute for rosin (abietic acid) in sizing paper or as an entirely new sizing material. Baekeland *(13)*, the inventor of Bakelite, suggested the use of phenol formaldehyde as a sizing agent and was granted a patent in 1915 for the use of phenol formaldehyde in combination with pulp fibers. Various authors, West *(12)*, Rivise *(9)* Rossman *(11)*, Myers *(7)*, Dreher *(3, 4)*, and Klein *(6)* have described sizing methods using diqerent types of synthetic resins as the sizing agent. Dreher *(3)* studied the use of a German resin, Resinol, but did not give any data concerning the type and chemical properties of the synthetic resin he investigated.

Among the large number of synthetic resins now available, there is one group in particular, the silicones, that has attracted considerable attention through their many unusual and interesting properties. The investigation which will be described here in some detail, was carried out in an effort to determine if the silicones were suitable for use as a sizing material in paper. It should be noted that this research deals exclusively with the beater sizing of paper utilizing apparatus and equipment which are in common use in all modern paper mills.

The silicones make up a group of materials with compositions ranging somewhere between glass and the organic synthetic resins. They have been known for a long time *(1, 10)*. As early as 1871 research work was initiated on these substances, but the silicones have been only of academic interest up until the early part of World War II. However, intensive research work has been carried on since 1940 and tremendous progress in the field of the chemistry and application of the silicones has been made. They are now used in a large number of fields for such diverse purposes as lubricants, varnishes, rubber, etc. The silicones combine in a remarkable way the best properties of both inorganic and organic high polymers. Their most characteristic properties are stability against heat and resistance against chemicals and water.

The first use of the silicones in the paper industry took place during World War II when gas mask filter paper was treated with the vapor from methylchlorosilanes. The vapor reacts with the moisture in the paper forming an extremely thin film of methylpolysiloxane on the surface of the fibers *(5, 8)*. Sizing obtained by this method is very good, but a relatively large amount of hydrochloric acid adheres to the fibers due to the reaction between the water and the methylchlorosilane. As a result the paper must be neutralized immediately after the silicone treatment in order to avoid degradation of the cellulose, necessitating special processes and equipment.

In an attempt to overcome such degradation of the cellulose and the neutralization process a number of organosilicone compounds of other types than the methylchlorosilane have been tested with regard to their fitness as sizing agents for paper in beater sizing. The silicones, which have been investigated are of the methylsilicone resin type and the methylsilicone oil type. The following table contains a brief description of their properties and also the trade names and numbers of the diqerent silicones included in this investigation.

SILICONE TYPES EMPLOYED FOR SIZING

Dri-Film 81039*	Alkaline emulsion of high viscosity methylsilicone oil.
Dri-Film 81040	Alkaline emulsion of low viscosity methylsilicone oil.
Dri-Film 81041	Acidic emulsion of low viscosity methylsilicone oil.
Dri-Film 9990	Alkaline solution of methyl silicone.
Dri-Film 9980	Methylsilicone resin solution.
Dri-Film 9978	Special fast curing silicone resin solution.
Dow Corning 2103**	Silicone resin in toluene solution.

Experimental

It has already been pointed out that the sizing of paper with silicones should be performed by using a beater sizing process and methods which as closely

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[1] Member TAPPI; Superintendent Inlands Aktiebolag, Lilla Edet, Sweden. Formerly Graduate Assistant, New York State College of Forestry, Syracuse, N. Y.

[2] Member TAPPI; Professor of Pulp & Paper Manufacture, New York State College of Forestry, Syracuse, N. Y.

* Dri-Film is the trade mark of the General Electric Company for substances or chemicals for treating water nonrepellent organic and inorganic materials to render them water repellent.

** Dow Corning is the trade name for silicones made by the Dow Corning Corporation.

as possible correspond with methods used in paper mills. At the same time the procedure must be suitable for laboratory work and it must also be possible to duplicate the experiments with good accuracy and small variations in the values obtained. Such a method for beater sizing, sheet making and drying of the sheets has been developed by Dennett and Libby *(2)*, and this method has been followed very closely in this research.

A Niagara beater of 1.5 pounds capacity and of the type used in making strength tests by the TAPPI standard method was employed in the beating and sizing operation. The sheets were made on a British standard sheet machine equipped with a sump tank large enough to hold the white water resulting from the manufacture of one sheet. By means of a bronze gear pump the white water was returned from the sump tank to the sheet mould to dilute the stock for the next sheet. In this manner the same white water was used to dilute the pulp for every sheet of a series manufactured in the sheet machine.

The pulp utilized for these sizing experiments was a bleached sulphite (alpha pulp) obtained from the Brown Company, Berlin, New Hampshire, and had an ash content of 0.14%. In order to secure as uniform conditions as possible distilled water was used throughout this investigation except in a number of runs where the influence of different types of water on the sizing was to be determined.

Pulp containing about 70% moisture was added to the beater, equivalent to 400 grams of moisture-free pulp. The consistency in the beater was made up to 2% with distilled water and the pulp beaten to a freeness of 190 ± 10 ml. as determined by the Canadian Standard freeness tester. When the proper freeness was reached the size suspension was added and allowed to mix with the pulp for 15 minutes. This was followed by the addition of sufficient alum (in a 5% solution) to bring the pH value to about 4.3 after which another 15 minutes of mixing was conducted. A sufficient amount of stock was saved to be used in making sheets and the white water removed from the remaining pulp by filtering through cheese cloth. A part of the white water was used to dilute the stock for the sheets and another part was poured into the sheet machine.

In order to determine the exact consistency of the stock and to build up the white water system to insure equilibrium conditions, ten sheets were made and dried. From the moisture-free weight of the test sheets the correct amount of stock was calculated to give a sheet weighing 1.2 grams, or 60 grams per square meter, moisture-free weight.

In couching the sheets from the sheet machine, felts soaked in white water were used in order to duplicate the actual conditions on a paper machine insofar as possible. The excess water in the felts after they had been soaked was removed by passing the felts through a regular cloth wringer. The sheets were placed against drying plates and an extra felt put in between each sheet and its plate. Twenty-four sheets were made and pressed for 60 seconds under a pressure of 50 p.s.i. The felts were removed and the sheets adhering to the plates were dried in an oven equipped with forced air circulation. The drying temperature for the preliminary work was 105°C. and for the final work 115°C. The temperature within the oven was very uniform and all sheets were assumed to have been dried under identical conditions.

TABLE I.—SIZE TESTS ON COMMERCIAL GRADES OF PAPER

Type of Paper	Cobb Size Test, grams
Byron Weston Bond	0.243
Old Deerfield Bond	0.199
Trojan Bond	0.210
Mead Bond	0.170
C McE Bond	0.208
Wrapping paper, No. 1	0.204
Wrapping paper, No. 2	0.233
Wrapping paper, No. 3	0.367
Laboratory paper, 3% rosin	0.210

TABLE II.—SIZING WITH COMBINATIONS OF SILICONE AND ROSIN

Run No.	Drying, °C.	% Rosin	Cobb Size Test, grams	Run No.	Drying, °C.	% Rosin	% Dri-Film 9990	Cobb Size Test grams
		0.0	0.585					
92	105	0.25	0.462					
25	105	0.50	0.326					
24	105	1.0	0.259	28	105	1.0	0.13	0.218
23	105	1.50	0.240					
22	105	2.0	0.236	27	105	2.0	0.25	0.213
21	105	2.50	0.229					
20	105	3.0	0.236	26	105	3.0	0.38	0.203

The degree of sizing was measured by the Cobb sizing test (TAPPI standard T 441 m-45). Before the sheets were tested they were conditioned for at least 12 hours at 50% relative humidity and 73°F. Fifty milliliters of distilled water were used in the Cobb testing instrument and the time of exposure of the sheet to the water was 3 minutes, including 15 seconds for removing excess water.

In order to obtain comparative sizing values a number of sizing tests were performed on commercial grades of paper and also on laboratory sheets sized with rosin. The results are given in Table I.

From the test data obtained and tabulated in Table I it was decided that the maximum water pickup for a well sized sheet should not exceed 0.250 grams per 100 square centimeters. On this basis sheets giving a water pickup greater than 0.250 grams/100 sq. cm. should be considered unsatisfactory or slack-sized.

Sizing with Combinations of Silicone and Rosin

In the first experiement with the silicones as a sizing agent for paper a solution was prepared containing both silicone and rosin. The type of silicone used was an alkaline solution, Dri-Film 9990. It was combined with the rosin by saponifying the rosin with the excess of alkali in the silicone solution. The ratio between the rosin and silicone was determined by the amount of alkali available in the silicone solution. This solution contained 20.42% silicone and 16.00% Na_2O, thereby producing a size solution containing 37.7 grams rosin (100% saponified) per liter, and also 4.8 grams silicone per liter. The amount of size solution added to the beater was calculated as the weight of rosin on the weight of pulp. The procedure of beating, addition of size and alum, sheetmaking, pressing, drying, and testing the sizing was performed for each run in the same manner as outlined above.

Three runs were made with varying amounts of size solution, 3, 2, and 1% rosin, respectively, corresponding to 0.38, 0.25, and 0.13% silicone. For purposes of comparison a number of runs were performed using plain saponified rosin. The results of all runs are tabulated in Table II and shown in Fig. 1.

As is shown in Table II only a very small increase was obtained in the sizing value and it was, therefore, decided that no more work should be done using a combination of saponified rosin and Dri-Film 9990.

Sizing with Dri-Film 9990.

An attempt was next made to use Dri-Film 9990 alone as a sizing agent after applying the regular beat-

ing and sheetmaking procedure. However, no sizing whatsoever was obtained, as is shown in Table III.

TABLE III.—SIZING WITH DRI-FILM 9990

Run No.	Drying, ° C.	% Dri-Film 9990	Cobb Size Test, grams	Remarks
30	105	0.5	0.614	Size added in regulation manner after beating.
31	105	0.5	0.589	Size added to the beater before pulp.
32	105	0.5	0.674	Size added after beating. No alum added.
33	105	0.5	0.660	Size added to the beater before pulp. No alum.
34	105	3.0	0.516	Size added after beating.
35	105	3.0	0.567	Size added to the beater before pulp. pH = 6.8.

The results obtained by sizing with Dri-Film 9990 in combination with rosin and with Dri-Film 9990 alone indicated that this type of silocone was not suited for use as a sizing agent. An attempt was made to determine by means of an ash test if the silicone was retained by the pulp fibers. However, variations in the results were too large to make it possible to draw any conclusions about the per cent retention. It was therefore decided that an entirely different type of silicone should be employed in the next runs.

SIZING WITH DRI-FILM 81040.

The silicone chosen for the next tests was a low viscosity methylsilicone oil in an alkaline emulsion, Dri-Film 81040. The silicone was added to the beater in several different ways employing the regulation beating and sheet making procedure. The result was very poor, as shown in Table IV, notwithstanding the fact that the silicone was added before the beating had been started as well as after it had been completed.

TABLE IV.—SIZING WITH DRI-FILM 81040

Run No.	% Dri-Film 81040	Cobb Size Test, grams	Drying, ° C.	Remarks
59	0.5	0.623	105	Size added after beating finished.
58	3.0	0.574	105	Size added after beating finished.
57	3.0	0.625	105	Size added to the beater before the pulp.

However, it was known from other investigations where the methylsilicone oil (Dri-Film 81040) had been used that it would develop better water repellant properties by heat curing. Sheets from two runs were therefore heat treated at different temperatures and the sizing tested after the sheets had been conditioned. All sheets were heat treated for 15 minutes, after they had been dried at 105°C, in the same oven previously used for the drying operation. The results are tabulated in Table V, and shown graphically in Fig. 2. The size test for sheets dried at temperatures below 105°C. is also given.

TABLE V.—EFFECT OF HEATCURING

Run No.	% Dri-Film 81040	Cobb Size Test, grams	Drying or Heatcuring Temperature, ° C.
58	3.0	0.641	75
		0.574	105
		0.383	125
		0.170	150
		0.139	175
		0.133	200*
59	0.5	0.649	75
		0.623	105
		0.581	125
		0.341	150
		0.159	175
		0.153	200*

* Heatcuring for 5 minutes.

The results included in Table V. indicate that the silicone is retained by the fibers and that the water repellent properties of this particular silicone are dependent upon the temperature used for drying the paper sheets. It may also be concluded that even a small amount of Dri-Film 81040 gives good sizing if the sheets are dried or heat cured at a sufficiently high temperature. The same result was obtained when a high viscosity methylsilicone oil, Dri-Film 81039, was employed and heat cured as is shown also in Fig. 2. However, the temperature which has to be applied to develop maximum sizing properties is far too high for the usual paper machine. The normal drier temperature on a paper machine is between 100 and 125°C. which is the temperature zone indicated in Fig. 2. It was decided, therefore, that a silicone requiring a lower heat curing temperature should be employed if it was obtainable.

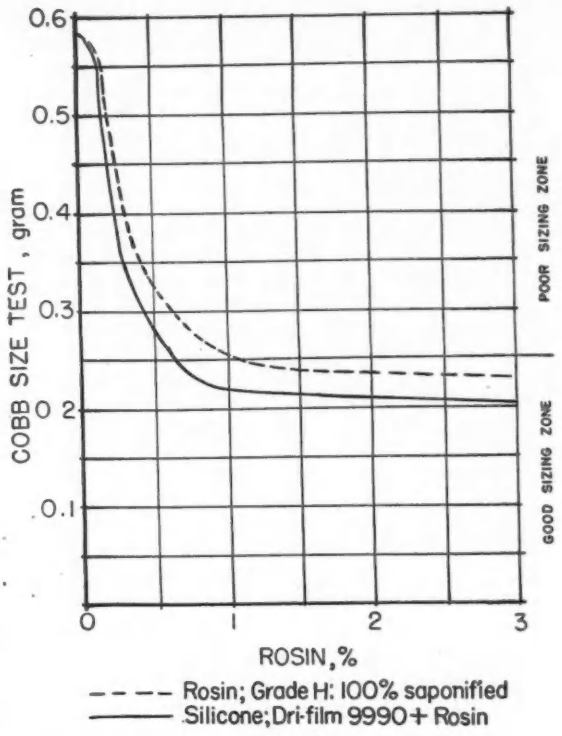

FIG. 1
Results of Sizing with Combinations of Silicone and Rosin

SIZING WITH DRI-FILM 9978

Two new types of silicones were tested without any positive results. The silicones investigated were a methylsilicone resin solution, Dri-Film 9980, and a silicone resin in toluene, Dow Corning 2103. Finally a special fast curing resin dissolved in toluene, Dri-Film 9978, was chosen. This particular type showed very interesting results when used in preliminary tub sizing tests and it was believed that good results should be obtained also in beater sizing, if the silicone could be evenly dispersed and retained by the fibers.

Several runs that resulted in good sizing were made using 0.3% Dri-Film 9978 with different dispersing and stabilizing agents as shown in Table VI.

TABLE VI.—SIZING WITH DRI-FILM 9978

Run No.	Drying, ° C.	% Dri-Film 9978	Dispersing Agents		Cobb Size Test, grams
			% Geon	% Gelatin	
73	105	0.3	3.0	...	0.208
74	105	0.3	0.08	0.37	0.233
80	105	0.3	...	0.37	0.233

In run No. 73, 3% Geon latex (a polyvinyl chloride synthetic resin) was used in combination with the silicone. In run No. 74 not only 0.08% Geon, but 0.37% gelatine also were dispersed together with the

silicone resin. In run No. 80 gelatin was used alone. The effect of Geon and gelatin as sizing agents had previously been tested but without any sizing as a result. The standard method of beating the pulp and sheetmaking was employed and the pH brought down to 4.3 by adding a sufficient quantity of alum.

As a result of the data obtained the conclusion was reached that it was possible to disperse the silicone uniformly among the fibers and also that the fibers retained the silicone. The sizing values for sheets sized with Dri-Film 9978 and dried at 105°C. fell well within the zone for a well sized paper.

The emulsions made by using the previously described dispersing agents were very unstable and, therefore, the sizing with Dri-Film 9978 was repeated in run No. 84 omitting a dispersing agent. The silicone, dissolved in toluene, was dispersed in distilled water by vigorous shaking and the emulsion was added to the beater before it had started to break up. The sizing result is shown in Table VII.

TABLE VII.—SIZING WITH PLAIN DRI-FILM 9978

Run No.	Drying, °C.	% Dri-Film 9978	Cobb Size Test, grams
84	105	0.15	0.223

There was no loss in the sizing in this run despite the fact that only 0.15% silicone had been used compared to 0.30% in runs Nos. 73, 74, and 80.

In the following runs the above described method of dispersing the silicone in plain distilled water was used before the addition of the emulsion to the beater.

Effect of Heatcuring on Dri-Film 9978

The effect of drying sheets sized with Dri-Film 9978 at different temperatures and of heatcuring at temperatures above 105°C. was investigated. It was found that heattreating increased the sizing, but not too such a great extent as for the previously tested Dri-Films 81040 and 81039. The water pickup for a sheet heat cured at 200°C, was about the same as for paper sized with Dri-Film 81040 and heat cured for 5 minutes at 200°C. Also rosin sized paper, heattreated at 200°C, gave the same water pickup as indicated in Fig. 2.

Amount of Dri-Film 9978

Runs Nos. 80 and 85 indicated that only a very small amount of Dri-Film 9978 was necessary to give good sizing. Several runs were performed in order to determine the amount of silicone actually necessary to give satisfactory sizing. The results are tabulated in Table VIII and shown graphically in Fig. 3.

TABLE VIII.—AMOUNT OF DRI-FILM 9978

Run No.	Drying, °C.	% Dri-Film 9978	Cobb Size Test, grams
80	115	0.30	0.215
85	115	0.15	0.213
86	115	0.075	0.214
88	115	0.05	0.543
87	115	0.025	0.569
76	115	0.019	0.552
3	115	0.00	0.585

It is obvious that the amount of silicone necessary for good sizing is very small. Under the given conditions, using the standardized beating and sheet-making methods and employing distilled water, the amount necessary is less than 0.1%.

Sizing With Combinations of Dri-Film 9978 and Dri-Film 81040

It has been proven in the previous investigations that both Dri-Film 81040 and 9978 give satisfactory sizing under certain conditions. It was logical therefore, that a series of runs be made using combinations of the two silicones in order to determine under what conditions they would give sizing when employed together. The amount of Dri-Film 9978 was varied and the amount of 81040 was kept constant at 1.0% for one group of runs and at 0.5% during the second group of runs. The results are shown in Table IX and in Fig. 3.

TABLE IX.—COMBINATIONS OF DRI-FILM 9978 AND 81040

Run No.	Drying, °C.	% Dri-Film 81040	% Dri-Film 9978	Cobb Size Test, grams
111	115	1.0	0.075	0.223
107	115	1.0	0.0375	0.213
109	115	1.0	0.025	0.279
108	115	1.0	0.010	0.368
81	115	1.0	0.00	0.590
110	115	0.5	0.10	0.226
70	115	0.5	0.05	0.226
104	115	0.5	0.0375	0.265
103	115	0.5	0.025	0.420
59	115	0.5	0.00	0.585

In comparing the results from the above runs with the results obtained from sizing with Dri-Film 9978 alone, it is notable that an appreciable saving of Dri-Film 9978 was obtained by using a combination of the two silicones. The conclusion may be drawn that the fast curing resin acts as a catalyst for the silicone oil when a mixture of the two is used.

The results given in Table IX indicate also that it is possible to use a great number of different combinations of Dri-Film 9978 and 81040, all giving well sized paper. The optimum combination to be chosen would, of course, depend upon the costs of the different silicones.

Sizing with Combinations of Rosin and Dri-Film 9978

In order to determine if Dri-Film 9978 would also increase the sizing effect when combined with a small

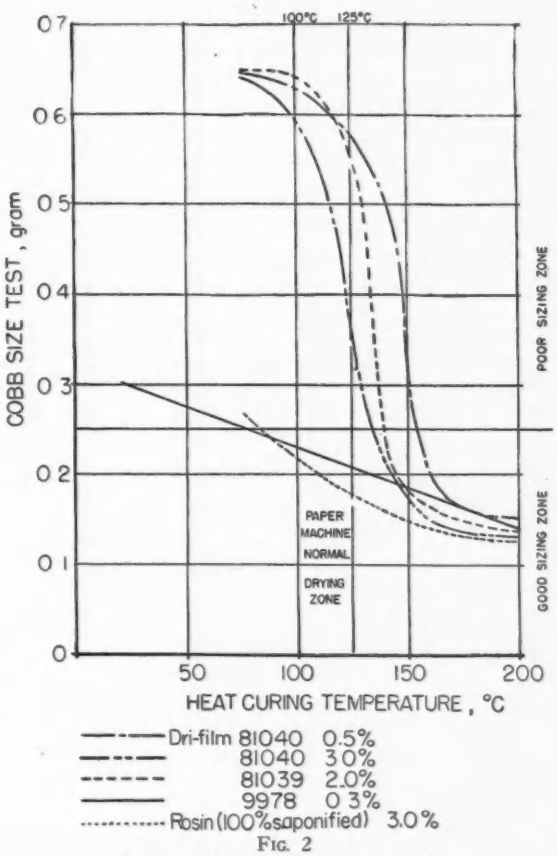

FIG. 2

Effects of Heat Curing on Silicone Sizing

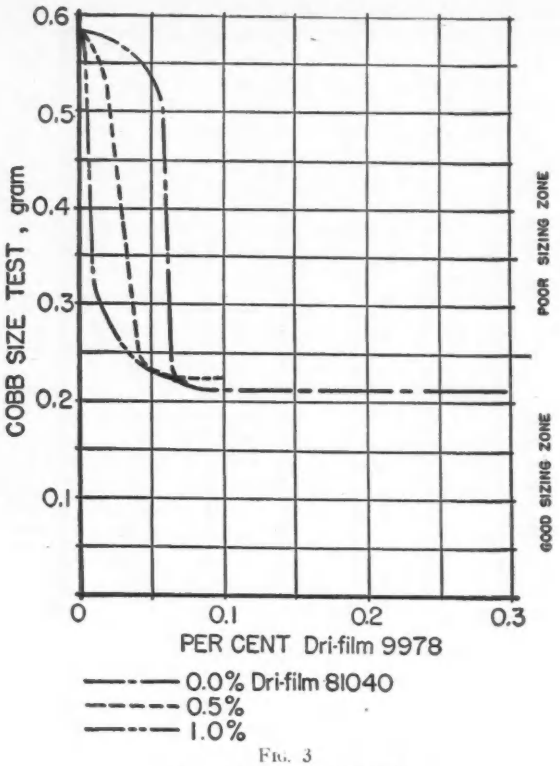

FIG. 3
Sizing with Mixtures of Dri-Film

amount of rosin size, a run was made using 0.25% rosin (100% saponified) and 0.025% silicone. This amount of silicone alone would not give any sizing as was shown previously in the work reported in Table VIII. Neither would this amount of rosin give any sizing effect as indicated in the following table. The results from the combined sizing agents also are given in Table X.

TABLE X.—SIZING WITH COMBINATIONS OF ROSIN AND DRI-FILM 9978

Run No.	Drying, ° C.	% Rosin	% Dri-Film 9978	Cobb Size Test, grams
90	115	0.25	0.025	0.474
92	115	0.25	....	0.462

These data do not show that a change in sizing has taken place. The fast curing silicone resin seems to increase the sizing only in combination with other types of silicone resins or oils. In Fig. 4 the effect of combined sizing is shown graphically.

Effect of Freeness

Thus far in this investigation sizing had been performed at the same freeness of pulp and using standard methods in making test sheets. In order to determine the effect of varying freenesses of the sized stock several runs were made with freeness values between 100 and 400 ml. using a combination of silicone size containing 0.5% Dri-Film 81040 and 0.05% Dri-Film 9978. The results are tabulated in Table XI.

TABLE XI.—EFFECT OF VARIATIONS IN FREENESS

Run No.	Freeness, ml.	Drying, ° C.	Cobb Size Test, grams
114	99	115	0.258
70	192	115	0.226
115	310	115	0.218
116	400	115	0.219

From the foregoing results it is apparent that the freeness of the pulp stock effects the sizing only to a small extent. The conclusion may be drawn that the trend is for the sizing effect to be greater with increased freeness of the pulp stock.

Effect of Pulp Type

Several runs were made employing different types of pulp in order to determine the effect of the pulp quality on the sizing result.

The pulp used was beaten to a freeness of 190 ml. Canadian Standard and the regular sheet making procedure applied. The size suspension employed was a combination of 0.5% Dri-Film 81040 and 0.05% Dri-Film 9978. The results are given in Table XII.

TABLE XII.—EFFECT OF PULP TYPE

Run No.	Type of Pulp	Drying, ° C.	Cobb Size Test, grams
132	Bleached sulphite	115	0.220
119	Unbleached sulphite	115	0.247
123	Bleached sulphate	115	0.254
120	Unbleached sulphate	115	0.285
121	Bleached soda	115	0.203
122	Groundwood	115	0.306

The results indicate that satisfactory sizing in general can be obtained with the same amount of silicone size for the most common types of pulp, excepting groundwood. The variations in the sizing results are believed to originate from differences in sheet formation. This seems to be true especially for the groundwood sheets. The first sheet made from the groundwood stock had fairly good sizing, exhibiting a water pickup of 0.253g/100 sq. cm., but the sizing decreased with the number of sheets made. Thus sheet No. 15 had a water pickup of 0.952g/100 sq. cm. The conclusion may be drawn that the consumption of fines in the white water in the initial sheets caused poorer formation of the later sheets and that the fines were more easily sized than the larger groundwood fibers.

Effect of pH Conditions

In order to study the effect on the sizing of varying pH values at the moment of addition of size, a number of runs were made adding the size to stock possessing different degrees of acidity. The regular beating and sheetmaking procedure was used and time allowed for mixing of the size and alum before the sheets were made.

One run was made adding size to the stock at a pH of 3.25 and adjusting the acidity of the pulp to 4.3 before the sheets were made by the addition of sodium hydroxide. Another run was undertaken in which the silicone was added to an acid stock and the pH adjusted to 7.0 by the addition of alkali. The results are given in Table XIII.

TABLE XIII.—EFFECT OF pH OF STOCK ON SIZING

Run No.	% Dri-Film 9978	pH of Stock: When Size Added	pH of Stock: When Sheets Made	Drying, ° C.	Cobb Size Test, grams
98	0.075	9.60	4.3	115	0.573
86	0.075	5.85	4.3	115	0.214
99	0.075	3.25	4.3	115	0.241
135	0.075	4.75	7.0	115	0.238

The results tabulated in Table XIII lead to the conclusion that the sizing effect is dependent upon the pH of the stock at the moment the size is added and that only acid stock will produce well sized paper. If the size is added to an alkaline pulp no sizing will be obtained even if the final pH is below 7.0, i.e. when the sheets are formed. On the other hand, if the silicone is added to an acid stock, sizing will be obtained if the pH value is raised to around 7.0 before the sheets are made. Inasmuch as a sufficient number of runs were not made, it is impossible to conclude whether or not the degree of sizing will vary if the silicone size is added to stock of varying pH below a value of 7.0.

Effect of Aging of Sized Stock and Aging of Dried Sheets.

The time between the addition of resin and the making of the sheets is of great importance with certain types of synthetic resins particularly with reference to the sizing effect and the properties of the paper, for many synthetic resins hydrolize in contact with water.

In order to determine the influence of water on the silicones and the influence on the sizing of the time between addition of size and the sheet making operation, a run was made in which these time intervals were varied. The size solution employed was a combination of 0.5% Dri-Film 81040 and 0.05% Dri-Film 9978. The results are given in Table XIV.

TABLE XIV.—EFFECT OF AGING OF SIZED STOCK

Run No.	Time Delay in Sheet Making	Drying, ° C.	Cobb Size Test, grams
117	0	115	0.229
	5 hours	115	0.232
	24 hours	115	0.228

It is obvious that no change in sizing occurs during the storage of the stock for 24 hours.

The influence of aging on the dried sheets was determined over a period of about 2 months. The results are included in Table XV.

TABLE XV.—EFFECT OF AGING OF SILICONE SIZED PAPER

Run No.	Date of Size, Test	Drying, ° C.	Storage Time After the Sheets Were Made	Cobb Size Test, grams
117	Sept. 3rd	115	10 minutes	0.242
	Sept. 3rd	115	3½ hours	0.223
	Sept. 4th	115	24 hours	0.229
	Oct. 4th	115	31 days	0.219
	Nov. 8th	115	66 days	0.208

As shown in the foregoing table very little change in the sizing takes place by aging of the test sheets. The higher water pickup for sheets tested 10 minutes after the sheets were dried depends upon the fact that the sheets were not in equilibrium with the surrounding air in the test room at the moment of testing and, therefore, picked up more water than a sheet conditioned for a longer period of time. However, the conclusion may be reached that a small gain in sizing is obtained by the storage of silicone sized papers.

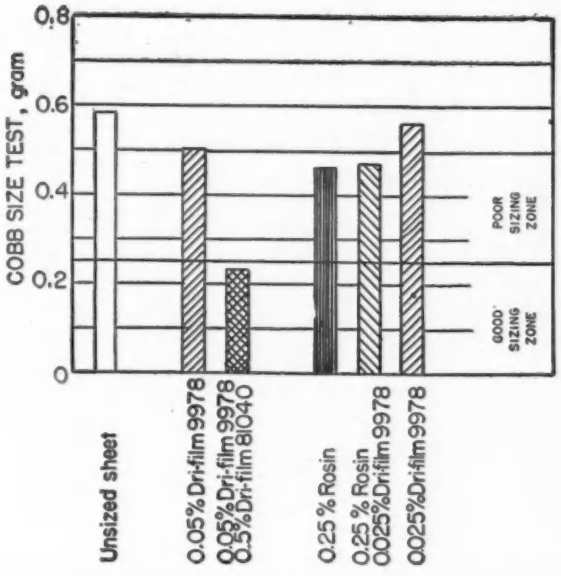

FIG. 4
Effects of Mixtures of Dri-Film and Other Sizes

Degree of Sizing Determined by the Ink Line Test

In order to supplement the data regarding the degree of sizing as determined by the Cobb test a number of ink line tests were performed on silicone sized paper using commercial available inks and a laboratory prepared recorder ink. As a comparison the test was performed also on the same commercial grades of paper as well as the laboratory paper which had been used for the Cobb test. The inks used were as follows:

1. Skrip; Sheaffers' 42
2. Quink; Parker containing Solv-X
3. Parker 51
4. Parker 51, using Parker 51 Fountain pen
5. Recorder ink (50% Glycerin, 50% Water)

The degree of sizing was determined by visual examination using the following classification: a. very good, b. good, c. fair, and d. poor.

The degree of sizing against glycerin ink (recorder ink) was judged after 24 hours of drying of the ink on the paper. The results are given in Table XVI.

TABLE XVI.—INK LINE TEST

Run No.	Type of Paper and Sizing	Type of Ink: Skrip	Quink	Parker 51	Parker 51 Pen	Recorder
...	Mead Bond	Good	Good	Fair	Fair	Fair-Good
...	Byron Weston Bond	Good	Good	Good	Good	Good
11	2.5% Rosin (100% Free)	Fair	Fair	Poor	Poor	Poor
21	2.5% Rosin (100% Sap.)	Good	Good	Fair	Fair	Fair
135	0.075% Dri-Film 9978	Good	Good	Fair	Fair	Poor
80	0.3% Dri-Film 9978	Good	Good	Good	Good	Good
133	{0.5% Dri-Film 81040} {0.05% Dri-Film 9978}	Good	Good	Good	Food	Fair

The foregoing data indicate that silicone sized papers give resistance not only against water penetration, but also to ink penetration. A larger amount of silicone seems necessary to give satisfactory sizing as determined by the ink line test as compared to that determined by the Cobb test. However, sizing with a combination of 0.5% Dri-Film 81040 and 0.05% Dri-Film 9978, which gives good sizing as determined by the Cobb test, also gives good sizing as determined by the ink line test. It is also worthwhile to point out that very good sizing against recorder ink (glycerin ink) was obtained using 0.3% Dri-Film 9978 as the sizing agent.

Effect of Different Types of Water

It is a well known fact that the quality of the water used in a paper mill has a great influence upon the sizing of paper. The water which had been used in all the initial runs of this investigation was distilled water and it was therefore decided that a series of runs should be made using other types of water. The effect of the following types of water on silicone sizing were therefore investigated:

Syracuse tap water, Onondaga lake water, softened Syracuse tap water, and deionized tap water.

The analyses of the Syracuse tap water and the

TABLE XVII.—ANALYSES OF WATER

Impurity	Syracuse Tap Water, p.p.m.	Onondaga Lake Water, p.p.m.
Hydroxide (OH)	0	0
Carbonate (CO_3)	0	0
Bicarbonate (HCO_3)	110	118
Sulphate (SO_4)	90	21
Chloride (Cl)	2	394
Silica (SiO_2)	2	2
Iron (Fe)	0.1	0.3
Aluminum (Al)	...	
Calcium (Ca)	27	125
Magnesium (Mg)	8	25
Suspended solids (est.)	3–4	4–6
Soap hardness	101	419
pH value	7.0	7.2

TABLE XVIII.—EFFECT OF DIFFERENT TYPES OF WATER

Run No.	% Dri-Film 9978	Type of Water	Drying, ° C.	Cobb Size Test, grams
86	0.075	Distilled water	115	0.214
91	0.075	Syracuse tap water	115	.575
94	0.075	Onondaga lake water	115	.565

Onondaga lake water are given in Table XVII. It is worthwhile to note the hardness constituent of these two waters and the high content of impurities in them.

In the sizing tests 0.075% Dri-Film 9978 and a mixture of 0.5% Dri-Film 81940 and 0.05% 9978 were used. The results are tabulated in Table XVIII and in Table XIX.

TABLE XIX.—EFFECT OF DIFFERENT TYPES OF WATER

Run No.	% Dri-Film 81040	% Dri-Film 9978	Type of Water	Drying, ° C.	Cobb Size Test, grams
132	0.5	0.05	Distilled water	115	0.220
125	0.5	0.05	Softened tap water	115	.566
136	0.5	0.05	Deionized tap water	115	.238

These results indicate that the water quality has a pronounced influence on the sizing when silicones are used as sizing agents. No attempt, however, will be made to explain this phenomenon, but the conclusion may be drawn that the ion content of the water is of great importance in silicone sizing. When softened tap water was used no sizing was obtained, but when deionized tap water was employed for the sizing experiments, good sizing was obtained as is shown in Table XIX.

However, not only the quantity of ions present in the water is of importance. The type of silicone and the emulsifier used also exert great influence on the sizing result as shown by the results of run No. 134. For this particular run an acid emulsion of a methyl silicone oil was used in combination with the fast curing silicone resin, Dri-Film 9978, replacing the alkaline emulsion which has been employed in the previous runs. The results are listed in Table XX.

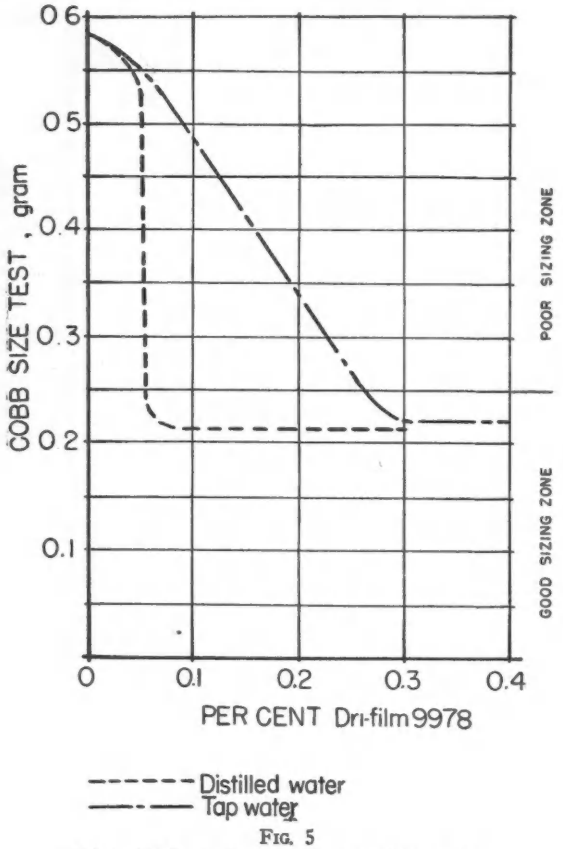

FIG. 5
Effect of Different Types of Water on Silicone Sizing

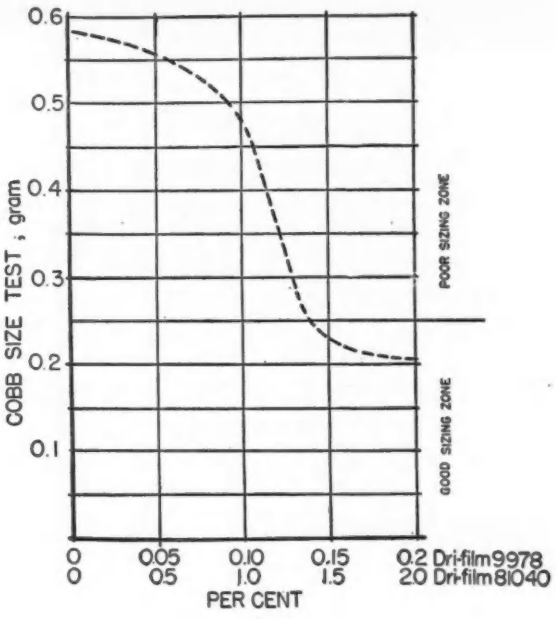

FIG. 6
Effect of Water on Silicone Sizing Tap Water

TABLE XX.—EFFECT OF DIFFERENT EMULSIFYING AGENTS

Run No.	Drying, ° C.	Type of Water	Sizing Agent	Cobb Size Test, grams
102	115	Tap water	{0.5% Dri-Film 81040} {0.05% Dri-Film 9978}	0.517
134	115	Tap water	{0.5% Dri-Film 81041} {0.05% Dri-Film 9978}	0.263

A considerable gain in the sizing value is obtained by the use of an acid (cationic) emulsion as compared to the sizing obtained by the use of an alkaline silicone emulsion.

The amount of silicone necessary to give a well sized sheet when tap water is used was determined for a mixture of Dri-Film 9978 and Dri-Film 81040 as well as for Dri-Film 9978 alone. The results are given in Table XXI and Table XXII, and shown in Fig. 5, 6, and 7.

TABLE XXI.—EFFECT OF TAP WATER

Run No.	Type of Water	% Dri-Film 9978	Drying, ° C.	Cobb Size Test, grams
93	Tap water	0.05	115	0.552
97	Tap water	0.075	115	0.524
96	Tap water	0.15	115	0.413
100	Tap water	0.30	115	0.222
105	Tap water	0.40	115	0.224

TABLE XXII.—EFFECT OF TAP WATER

Run No.	Type of Water	% Dri-Film 9978	% Dri-Film 81040	Drying, ° C.	Cobb Size Test, grams
102	Tap water	0.05	0.5	115	0.517
112	Tap water	0.10	1.0	115	0.514
118	Tap water	0.15	1.5	115	0.225
113	Tap water	0.20	2.0	115	0.203

Physical Properties of Silicone Sized Paper

The influence on the strength properties of silicone sized paper was determined by performing strength tests on the sheets from a number of different runs. The physical properties investigated were tensile strength, bursting strength, tearing strength, and per cent stretch.

TABLE XXIII.—STRENGTH PROPERTIES OF PAPERS CONTAINING VARIOUS SIZING AGENTS

	Unsized Paper	2.5% Rosin (100% Free)	3.0% Rosin (100% Saponified)	3.0% Dri-Film 81040	3.0% Dri-Film 81040 0.3% Dri-Film 9978	0.5% Dri-Film 81040 0.05% Dri-Film 9978
Weight, g./sq. m.	65.2	64.0	64.3	64.3	64.9	63.7
Tensile, meter	7850	7500	6640	5180	6360	7220
Stretch, %	3.4	3.1	3.1	3.0	3.2	3.0
Burst, %	71.8	72.7	61.1	50.6	52.7	64.2
Tear, %	72.5	70.2	76.2	93.3	92.3	79.4

All testing was performed after the sheets had been conditioned for at least 24 hours and the testing procedures employed corresponded with the TAPPI standard methods.

The results are reported as percentages for burst, tear, and stretch and the values for tensile strength are in meters. The results are given in Table XXIII and Table XXIV.

TABLE XXIV.—STRENGTH PROPERTIES OF PAPERS CONTAINING VARYING PERCENTAGES OF DRI-FILM 9978

Per cent Dri-Film 9978	0.3	0.15	0.075	0.05	0.025
Weight, g./sq. m.	64.5	62.6	65.5	66.3	65.0
Tensile, meter	6830	7280	7580	7730	7780
Stretch, %	3.3	3.3	3.3	3.5	3.3
Burst, %	68.8	73.8	72.2	73.2	73.4
Tear, %	85.6	72.7	78.3	81.5	73.4

From the data contained in Tables XXIII and XXIV it may be concluded that a small amount of silicone does not affect the strength properties of the paper when compared with the strength of an unsized sheet. A larger amount of silicone size will decrease physical strength values excepting tear strength. The decrease in physical strength values is of about the same magnitude as for a rosin sized paper.

Wet strength properties were also determined by testing the tensile strength after the paper had been soaked in water for a sufficient length of time to thoroughly wet it. The excess water was removed by the use of blotting paper. The results are given in Table XXV and compared with the wet strength of unsized paper and rosin sized paper. Data are given also for paper treated with melamine resin (wet strength paper).

TABLE XXV.—WET STRENGTH PROPERTIES OF PAPERS CONTAINING VARIOUS SIZING AGENTS

	Unsized Paper	2.5% Rosin (100% Free)	2.5% Melamine Resin	0.3% Dri-Film 9978	0.5% Dri-Film 81040 0.05% Dri-Film 9978
Weight, g./sq. m.	66.2	64.4	65.2	64.5	63.8
Wet tensile, meter	463	973	3340	1000	613
Dry tensile, meter	7850	7500	9310	6830	7220

The change in wet strength due to Dri-Film sizing is insignificant compared to the wet strength obtained with unsized paper.

Summary

1. This investigation has demonstrated that certain types of organosilicone compounds are suitable use as sizing ganets for paper.
2. The silicone having the best sizing properties is a fast curing silicone resin in a toluene solution, Dri-Film 9978. This resin will produce satisfactory sizing at normal paper machine drying temperatures.
3. Sizing is also obtained from an alkaline emulsion of methylsilicone oil, Dri-Film 81040, if a sufficiently high temperature is applied to the paper during the drying operation. The temperature necessary must exceed 160°C.
4. A combination of the fast curing silicone resin, Dri-Film 9978, and the alkaline emulsion of methylsilicone oil, Dri-Film 81040, will give satisfactory sizing at normal drying temperatures. Well sized paper can be produced from a large number of different combinations of these two silicones.

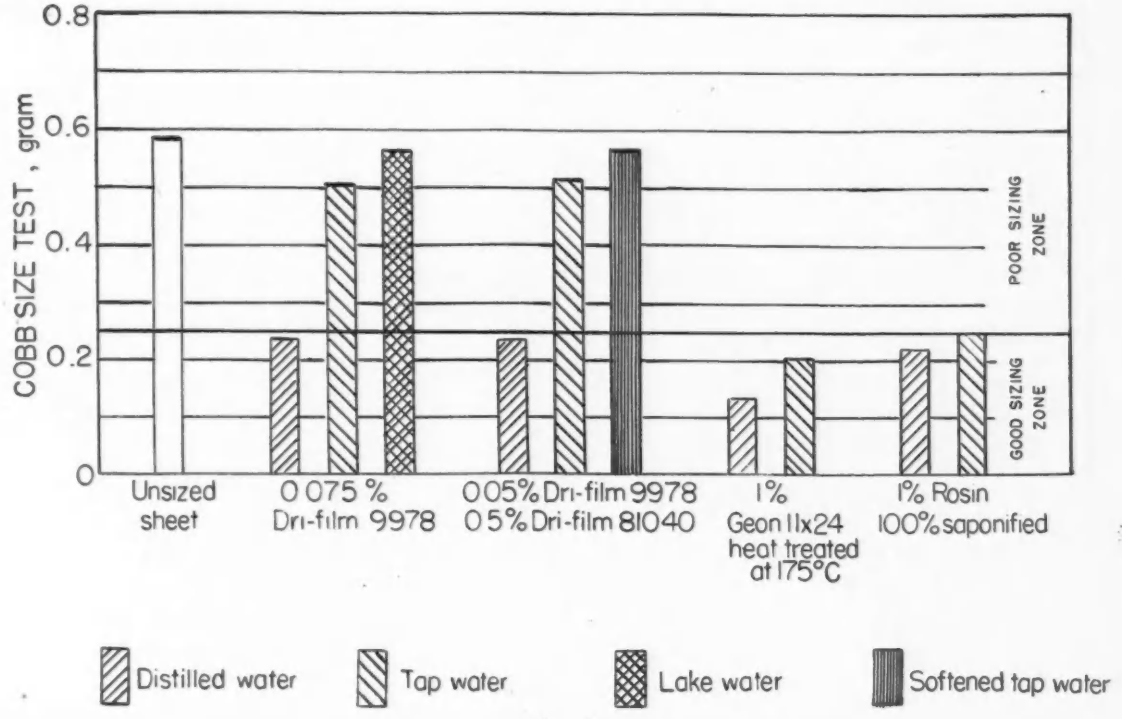

FIG. 7
Effects of Different Types of Water on Several Sizing Agents

5. Normal beater sizing methods are suitable for the application of silicone sizes.
6. Different freeness values of the pulp do not affect the sizing result.
7. The silicones are satisfactory as sizing agents for most types of pulp.
8. It was found that the silicone size had to be added to stock with a pH below 7.0 (acid stock) in order to produce satisfactory sizing. The pH of the stock after the addition of the silicone is without importance.
9. Silicone sized pulp stock may be stored for at least 24 hours without any change in the sizing value of the finished paper.
10. Storage of the dried sheets does not affect sizing values to any great extent. A tendency towards better sizing on storage was noted.
11. Silicone sized paper is ink resistant as determined by the ink line test. It is also resistant to recorder ink (glycerin ink), if a sufficient amount of silicone is applied.
12. The type of water used during the beating and sheet making procedure is of great importance. A hard water and water containing a large number of impurities will decrease the sizing effects of silicone. The ion content of the water is also of great importance.
13. By using an acid emulsion of methylsilicone oil, Dri-Film 81041, in combination with the fast curing silicone resin, Dri-Film 9978, the effect of hard water and impurities may be lessened.
14. The small amount of silicone size usually employed does not affect the strength properties of the paper. If a larger percentage is applied, the strength properties will decrease, except for the tear strength which will increase.
15. Silicone sizes do not alter the wet strength properties of papers in which they are used.
16. The small amounts of silicone necessary for good sizing makes the silicones especially suited for papers where a larger amount of size might cause difficulties. Thus silicone is suggested as sizing material for cigarette paper, condenser paper, etc.

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TAPPI Notes

Niles M. Anderson, formerly of the Marathon Paper Mills of Canada, Ltd., is now a consulting engineer, 71 Old Forest Hill Road, Toronto, Ont.

Lloyd W. Carpenter is now superintendent of E. W. Twitchell Company, Philadelphia, Pa.

Eugene H. Smith has recovered from his illness and is located in Booneville, Ark.

Chicago TAPPI Meets September 15

The Chicago Professional Paper Group (Chicago section of TAPPI), will open its 1947-48 season on Monday evening, September 15, with a dinner meeting at the Chicago Bar Association, at 29 S. LaSalle street. The program to follow the dinner promises to set a high standard for future meetings of this active society. The September program will take the form of a "Panel Discussion" on the subject "Paper and Paperboard as Bulk Packaging Materials for Corrugated Cartons, Multi-Wall Bags, Fibre Drums —Their Advantages and Limitations." The panel will feature such prominent figures in the paper converting field as E. R. Bolman, sales manager, Paper and Laminated Products Division of the Chase Bag Company, Chicago; Charles J. Zusi, Vice President of the Container Laboratories, Chicago; A. J. Godshalt, sales manager for Fiber Drum Co., Kankakee, Ill. and Paul Meelfeld, Advertising and Sales Promotional Manager for the Hinde and Dauch Paper Company, Sandusky, Ohio. A. L. Green, special representative for the Freight Claim Division of the Association of American Railroads, will preside as moderator.

Mr. Bolman will present and describe the application of various types of paper to the manufacture of Multi-wall, Waterproof paper lined, open mesh and Lined Duratex Bags; Barrel and Case Liners and Dublex papers.

Mr. Zusi's subject will cover testing methods and performance standards of shipping containers. Mr. Godshalt will take as his subject, the fields of usage for solid fibre drums and pails. He will also explain the use of linings and interior bags and liners for protection of various types of contents.

Mr. Meelfeld's portion of the panel will be devoted to describing new developments in the design of corrugated shipping boxes for rail, truck and air freight. His discussion will include display boxes, Dual use packages and new types of wrapping and packaging materials.

Samples of all the subjects under discussion will be shown by the speakers, and following the panel, question-and-answer periods will offer opportunities for the audience to take part in the discussion. This popular type of program has boosted attendances whenever used, and the program committee plans to hold several meetings of this kind throughout the coming season.

Coating and Ink Resins

The Reinhold Publishing Company has just issued "Coating and Ink Resins," by William Krumbhaar, President of Krumbhaar Chemicals, Inc., South Kearney, N. J. (318 pp. 6 x 9 illustrated).

The scope of the text is largely confined to the light colored, hard, soluble, and high viscosity groups of phenolic, maleic, and copal type synthetics, all of which show interested chemical reactivities when incorporated into surface coatings and printing inks.

Among the subjects covered are the following: Chemical fundamentals of coating and ink resins; Influence of resins on surface coatings and printing inks; The application of resins; Machinery and Equipment; The patent situation; The internal resin structure; The maturing process; Reactivities between resins and oils.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd Street, New York 17, N. Y., at $7.00 per copy.